The Mining Journal

LONDON, JULY 11, 1958

Vol. 251. No. 6412. Price Ninepence

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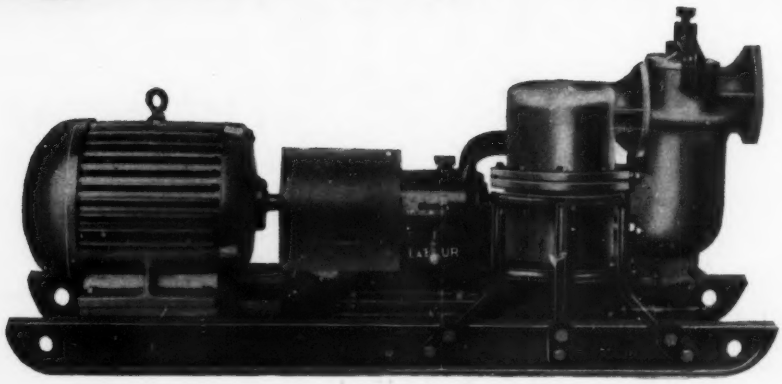

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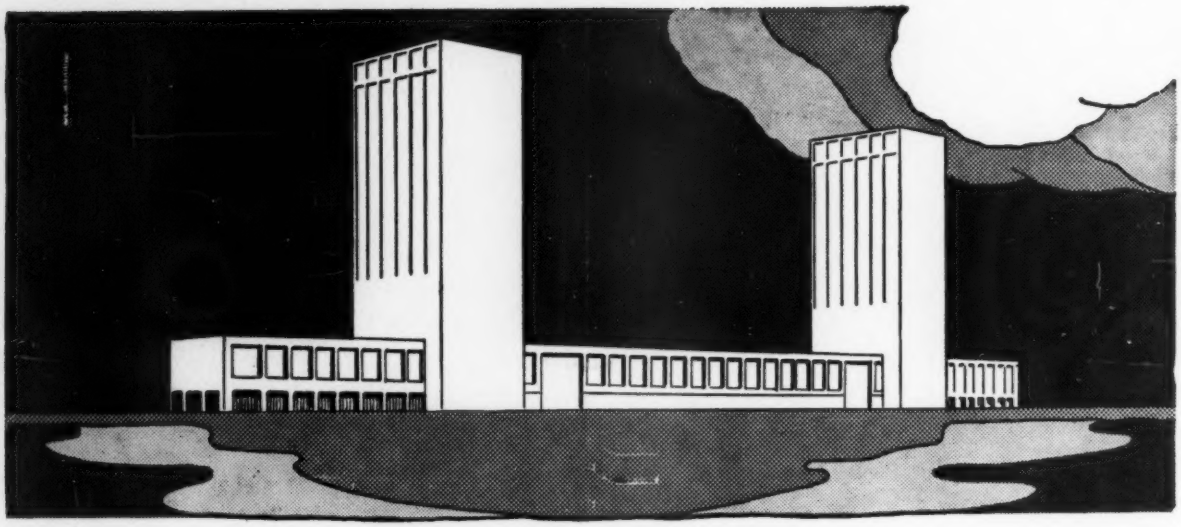

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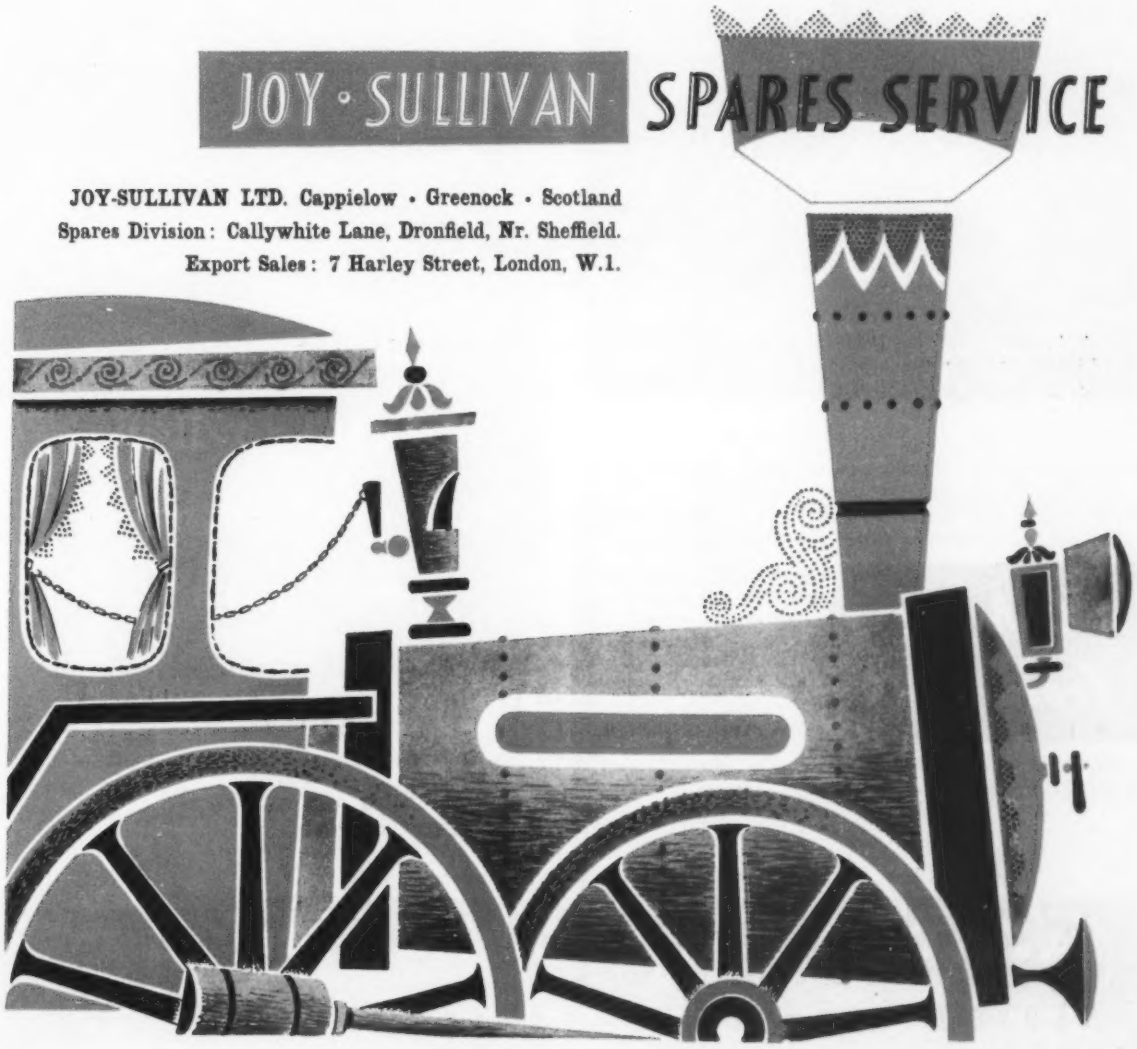

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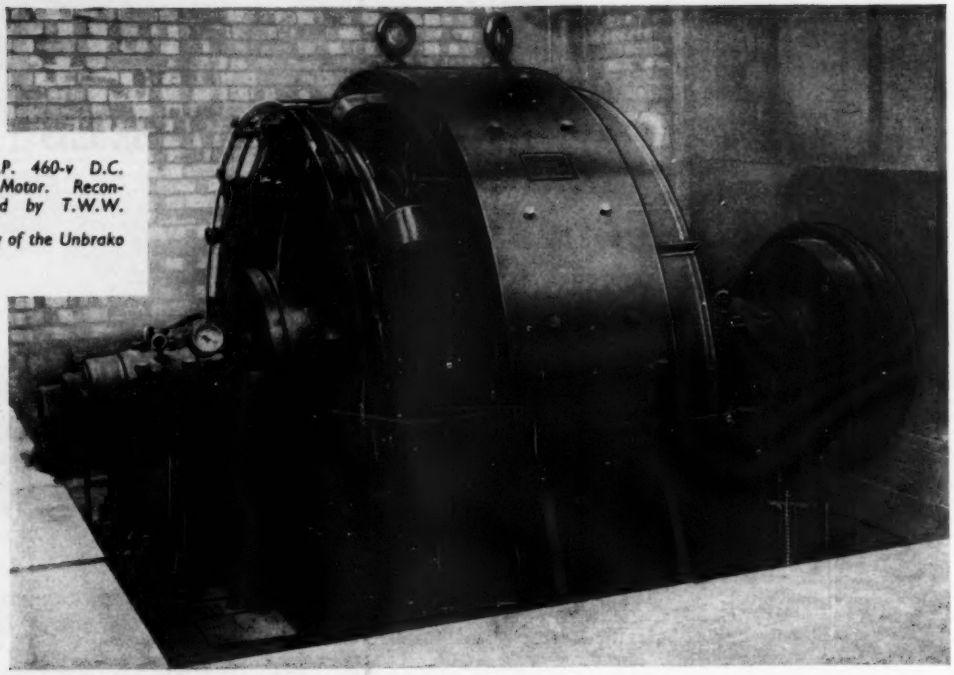

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110	400/440	580	S. Protected	Brook
110	400/440	960	S. Protected	Brook
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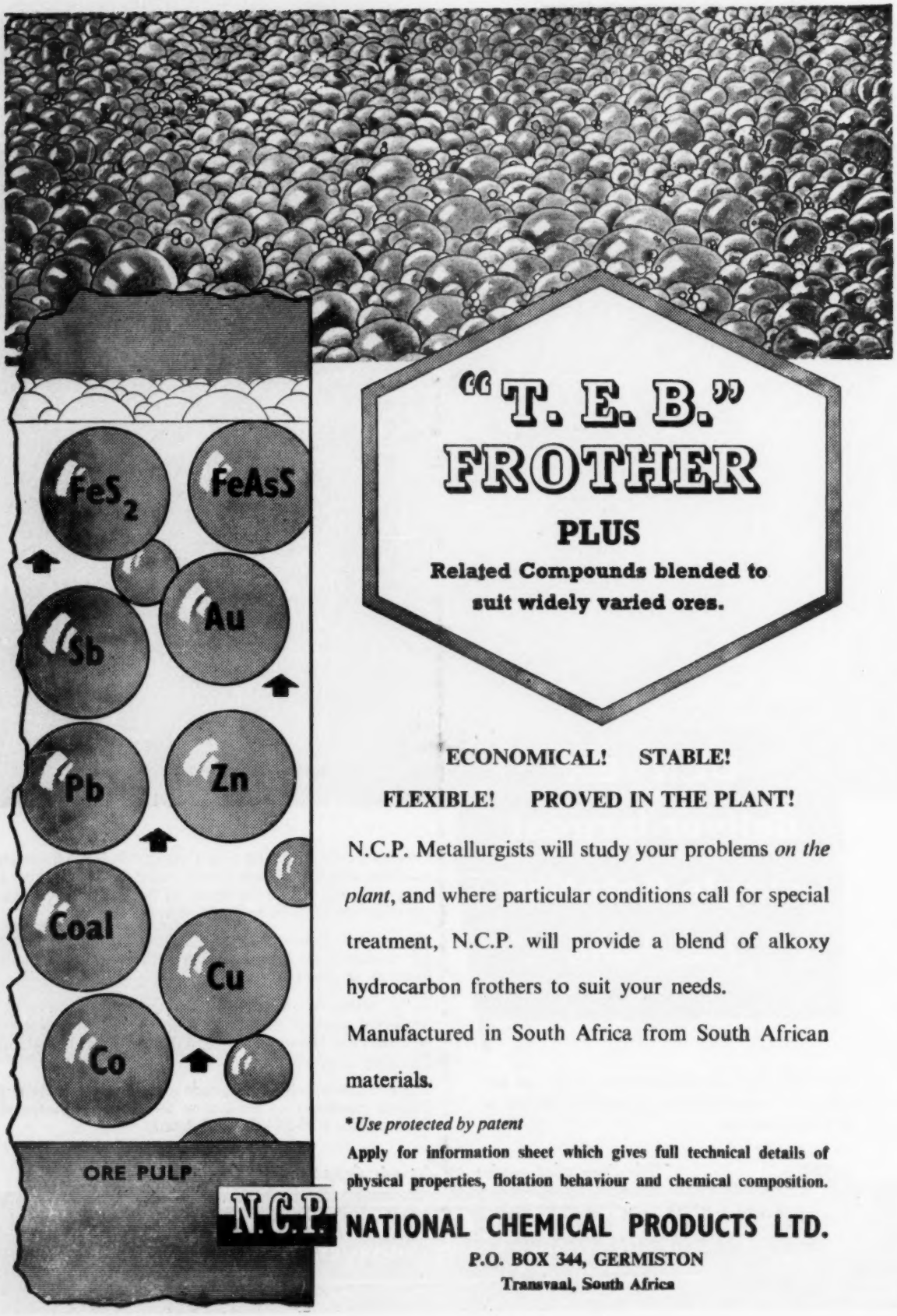

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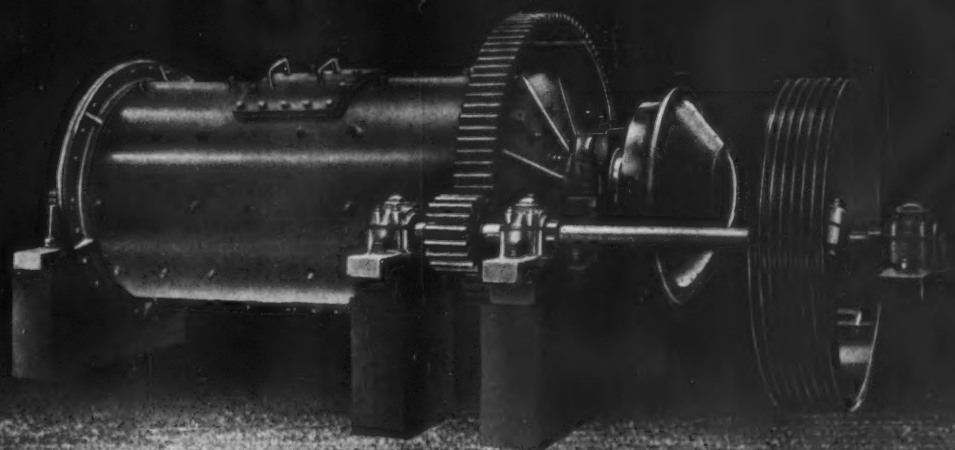

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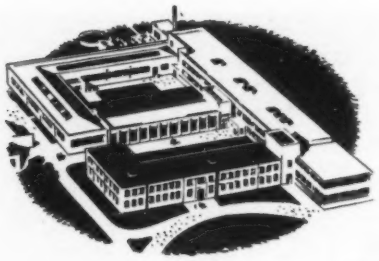

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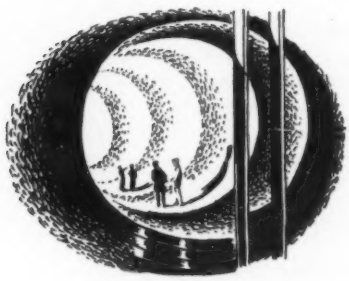

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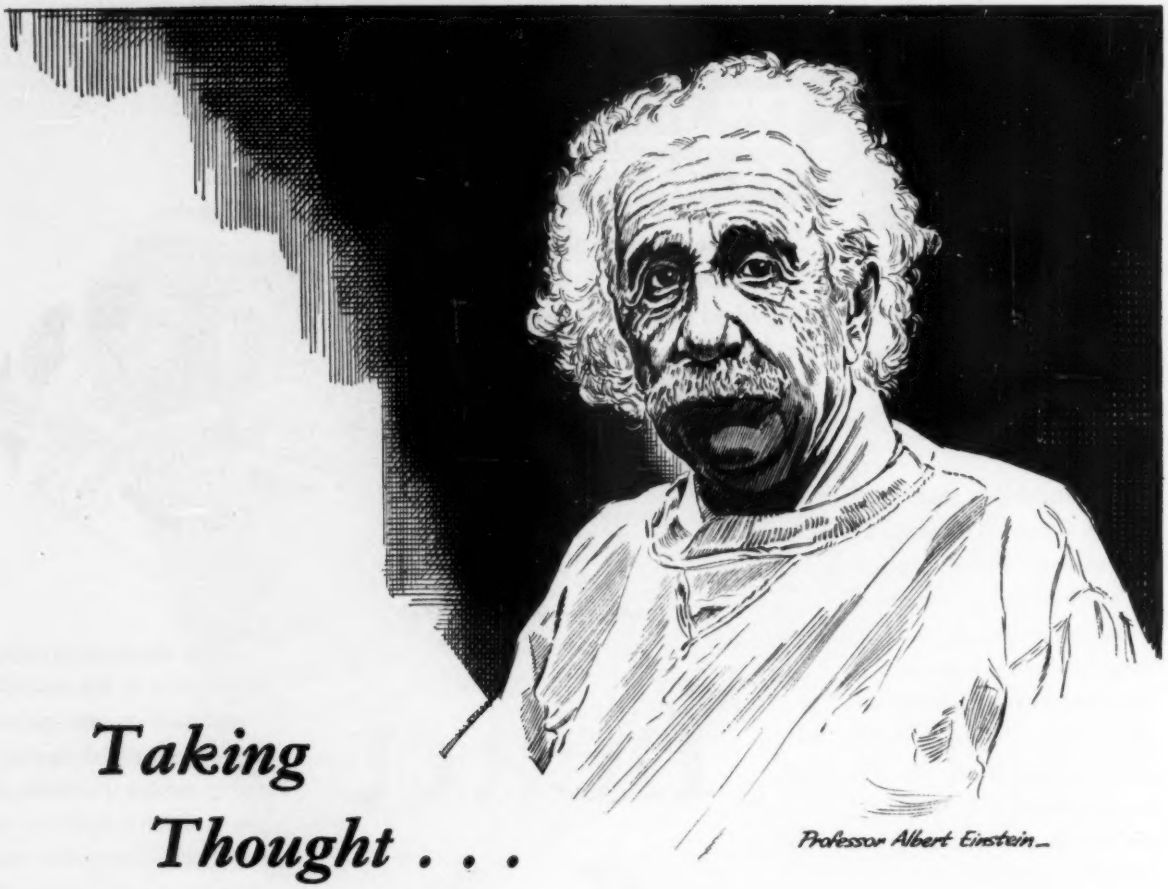

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The Mining Journal

London, July 11, 1958

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International Agreements for Copper, Lead, Zinc?

ARRANGEMENTS are now going ahead for a United Nations study conference on the problems of copper, lead and zinc. The meeting will probably take place in September and in Geneva; it will be held in two parts, the problems of lead and zinc being discussed in conjunction.

The "problems", of course, are those relating to instability of price, and the meeting has been arranged at the behest of a number of producing countries and after the Secretary-General has made discreet inquiries among other member countries that there would be sufficient support for it. While his participation has not yet been announced it is quite certain that the United Kingdom will attend.

Though the implied purpose of the conference is to examine what steps could be taken to reduce the price instability of the three metals, it can be taken for granted that the conference will not proceed immediately to the drawing up of international commodity agreements. Firstly, some countries (e.g. the United States) are likely to oppose the drawing up of such agreements; secondly, some others (the United Kingdom among them) will probably take the view that we need to have more facts and figures available before going so far. The group of countries (from Latin America) that will press for immediate action will probably spoil their case by demanding agreements of extreme sophistication guaranteeing some sort of price relationship between primary goods and manufactures. Demands of this kind will certainly frighten off the uncommitted moderates and haverers.

The most likely outcome of the conference therefore, is, that the countries will agree to make further studies of the problems. One way of doing this would be to set up international study groups comparable with the one that preceded the International Tin Agreement. But precisely because the study group is designed to be a forerunner of a commodity agreement (whether or not an agreement is actually made), there may be some pressure to have the studies made by an *ad hoc* committee, or by some body which less obviously foreshadows the way ahead.

All this may seem to lead to the conclusions that the conference will achieve nothing and that there will be no agreements at all. Both conclusions would be false. It has to be realized that there is no straight choice between a world in which copper, lead and zinc are freely sold and one in which they are subject to international agreement.

In the first place, in the United States—the biggest consumer and producer of all three metals—copper, lead and zinc are priced by the big producers. In the case of copper the activities of the custom smelters do—when circumstances are peculiarly favourable—introduce some element of freedom to the market; but they do not by themselves represent a free market and it is reasonable to suppose that, in the course of time, the proportion of metal going through the custom smelters will fall rather than rise. In Britain too there was for a time the attempt of R.S.T.—apparently with the ready concurrence of some consumers—to establish a fairly fixed price for its output. A fresh attempt cannot be ruled out. In other

words, over a wide area there is no free marketing of copper anyway. To a lesser extent this is true of lead and zinc.

Secondly, one has to take account of the high degree of vertical integration in the American producing industries. The classic division of producer and consumer no longer holds good there. This in itself also militates against the idea of a completely free market.

Thirdly — and this is the most important — there are various schemes now being considered (in the United States particularly, but elsewhere as well) for assisting domestic mines badly hit in the present price recession. In the United States there are currently three such schemes:

(a) the Tariff Commission's scheme for higher tariffs for lead and zinc with a minority report in favour of import quotas as well;
(b) the Seaton plan for offering direct subsidies on copper, lead, zinc, tungsten and fluorspar for the next five years on quantities roughly equivalent to the 1957 levels of output; and
(c) the Administration's latest plan that there should be another bout of stockpiling in the belief that one year of stockpiling would lift the surplus metal off the market and allow time for business to revive. (At the time of writing it appears that stockpiling is likely to be confined to copper.)

It can be taken for granted that one, some, or all, of these schemes will be enacted, wholly or partially, before the year is out; possibly before the United Nations conference goes into session. In which case the United Nations would be faced with a *fait accompli*.

If there is a *fait accompli* then discussions may be directed ineluctably on lines which they would have been likely to follow anyway. Given that there is no hope of reaching an agreement immediately — and possibly for the two years or more during which studies are made — then countries may press for some sort of agreement on the types of action that an individual country may reasonably take to protect its own domestic industry. Is it right for the United States to protect its own industry by a subsidy plan which will cut the floor away from the products of all other member countries? Most countries exporting lead, zinc and copper to the United States do not think so; and simple justice suggests that they are right. The United Kingdom could well support other producers if they make this sort of protest — indeed, the attitudes of Canada and Australia may well give her no choice. But the more that unilateral action is ruled out, the more will a full-scale international agreement appear as, in the long run, a possible solution.

There is no point in discussing the extreme technical difficulties which obstruct the drawing up of agreements for copper, lead and zinc. Financing, substitution and the problems of secondary metal are the most troublesome. But they might be overcome — given the determination.

If they were overcome then the most interesting point would be the role of the London Metal Exchange. Granted that it prefers a free market to a fettered one. Some, at least, of its members would probably have preferred to have had no tin agreement. But even under the tin agreement it has suffered no actual loss; and it is still used for determining price. In fact, the one prerequisite for an international agreement operated by a buffer stock is a genuine market on which the buffer stock manager could operate. The obvious market is the London Metal Exchange. Thus it might well be that the L.M.E. might develop a more favourable attitude — in certain circumstances — to international agreements on copper, lead and zinc to that which it tends to hold on tin. For tin, the L.M.E. is already universally acknowledged as the arbiter of prices. Its position since the war has not been unchallenged for the other metals.

All this is for the future — and perhaps the very distant future. If the United Nations conference does no more than try to improve the world statistics for the three metals so that we can all see more clearly what is happening, and at the same time try to limit the more extreme and internationally harmful protective measures which are being proposed by various producing countries, it will have done a very useful job indeed without even raising seriously the question of whether this is the time for a full international agreement.

PYROCHLORE IN AFRICA

In an article on columbium and tantalum, published in our issue of March 21, 1958, it was stated that the Anglo American Corporation was examining the possibilities of extracting pyrochlore from limestone at Nkombwa Hill in the Isoka district of Northern Rhodesia. Reference was then made to a similar deposit in the Feira District in the Central Province, about 150 miles from Lusaka, the discovery of which was ascribed to Anglo American.

Although the Feira deposit lies within the mineral concession owned by Chartered Exploration Ltd., a subsidiary of Anglo American, we are advised that its discovery was, in fact, made in 1956 by officers of the Geological Survey of Northern Rhodesia, in whose hands the investigation of this remarkable occurrence has since remained.

Similarly, the deposit of pyrochlore in the carbonatite of Nkombwa Hill was a Geological Survey discovery aided by photo-geological information supplied by the Mineral Resources Division of the Overseas Geological Surveys Directorate in London. This occurrence lies in a concession area formerly owned by Rhodesian Anglo American, who subsequently acquired the concession rights of the Nkombwa Hill area.

It is an interesting fact that, without exception, all the known carbonatite occurrences and associated ring complexes, pyrochlore-bearing or with other mineralization, in East and Central Africa have been discovered by the Geological Survey organizations of the territories concerned. They include Sukulu, Uganda, Chilwa Island, Tandula and Kangankunde Hill in Nyasaland, Homa Mountain and Mraima in Kenya, Panda Hill in Tanganyika, and Nkombwa Hill and the Feira Carbonatites in Northern Rhodesia.

AUSTRALIA'S CHANGED OUTLOOK TO PROSPECTING

For far too long Australia clung to the interests of the individual prospector and the small mine owner. Mineral lands were allotted in leases more suitable to their operational needs than to those of large organizations and there was strong disinclination to grant large concessions to strong companies able to prospect them thoroughly and to work ore occurrences on a large scale.

With the realization that chances for superficial discoveries had become very remote and that geophysics, in conjunction with geology, was the only means of locating hidden ore occurrences, and that the expense therein involved called for very extensive prospecting areas to justify the risk, and to eliminate the speculator who would peg out a likely lease adjoining a genuine operator, with the hope of selling his pegs to his neighbour in the event of an important discovery, the official outlook has completely changed, and the granting of prospecting areas of several thousands sq. miles is now the order of the day.

In the knowledge that large financial resources are needed to develop mineral deposits, Western Australia

has just issued large mineral concessions to three companies. Western Mining Corporation has been granted a reserve in the West Kimberleys of 2,000 sq. miles where four large outcrops of copper ore have been located; a second concession to this company covers prospecting for bauxite in the Darling Ranges, where occurrences have been known for many years. Bauxite is regarded as a longer range project than exploration for copper in the Kimberley country.

Rio Tinto has developed its interest in Australian mineral possibilities very rapidly, and to a subsidiary, Rio Tinto Pty. Ltd., the State Government has granted a reserve of 13,000 sq. miles in the Yilgarn field; records are being studied for the location of anomalies which will justify ground surveys. This concession excludes iron ore, which is a State preserve, and gold, the latter reservation being possibly in the interests of the small gold miner, who might still work small and shallow deposits unsuitable for larger-scale mining. United Uranium N.L. has been granted a temporary reserve over a discovery of uranium ore made in 1955 by the company near Hall's Creek, and which will now be more closely examined.

The same policy is being followed in all other States; aerial geophysical survey is being followed by surface work, geological and geophysical, and this by diamond drilling. So far, no spectacular results have been reported but it is believed that the west and south-west of Tasmania may hold some reward in that island. Meantime, the policy is right, and could well receive a substantial measure of government support and encouragement. Although government departments are active, it is felt that more could be done because of the immense importance of the mineral industry.

The Associated Chambers of Manufacturers in Brisbane has suggested ways in which aid might be given to the industry. These are : Scholarships for students to study geology; special encouragement for migrants trained in geology; extension and liberalization of taxation concessions to mining operations to encourage geological research by private enterprise. These suggestions stress geology, whereas their application is equally forceful to all aspects of mining engineering and metallurgy; geology cannot be considered alone. The Australasian Institute of Mining and Metallurgy, with the strong support of the large mining companies, is doing active work to influence the recruitment of students to the university and technical college courses, for it is fully recognized that the need for technical men in the profession is much greater than the intake. This need is being stressed by other institutes with regard to their own particular professions, for the shortage in all industries and professions is acute, more so in some than in others. This is a major, and serious, problem facing the mining industry.

The heavy fall in the price of metals emphasizes the incidence of taxation and royalties. Income from gold and uranium, either to companies or shareholders, is tax-free. This same concession should apply to all mining operations and shareholders' dividends until the subscribed capital has been repaid, for too often the gross dividend return does not repay capital invested during the life of the mine; a tax-free concession of only 20 per cent is allowed. The burden of royalties to governments, under present conditions, is inequitable; in the beach sand industry, royalty was fixed on rutile at 30s. per ton when the price exceeded £A120 per ton of concentrate, but this charge remains unchanged when the price has fallen to less than £30. Taxation and royalty concessions could be of great assistance in difficult times.

Actually, Commonwealth and State Governments are giving a useful measure of assistance, but in comparison with Canada, this aid is small. The Bureau of Mineral resources is carrying out geological and geophysical surveys and also drilling; State Governments are helping in drilling, and in Western Australia mineral deposits so located can be sold to private enterprise for subsequent development. The granting of large prospecting concessions is a further forward move. The Commonwealth offer of assistance to the amount of £A500,000 to assist in the search for oil is regarded as very small in comparison with an expenditure by private companies of some £A50,000,000 in the search.

In the matter of oil search, the government has agreed that if crude oil is found, profits from its sale will not be taxed until the company concerned has recouped its expenditure. This promised concession could well be applied to the whole mining industry.

NO GOLD IN THEM THAR CLAIMS!

Of far-reaching importance to the mining industry is the ruling of the U.S. Supreme Court that gold mine owners forced by the government to shut down operations during World War II are not entitled to compensation, thus ending years of litigation ensuing from War Production Board Limitation Order L-208. The WPB order, issued October 8, 1942, required closing of gold mines deemed non-essential to the war effort, with the object of conserving scarce equipment and materials and bringing about the voluntary relocation of skilled miners to the more vital copper mining industry.

On February 27, 1956, six companies, whose mines were closed as a result of the order, won a ruling by the U.S. Court of Claims that they were entitled to compensation. The Justice Department, in appealing for reversal of the decision, said about 150 similar claims by other companies could mean a total government liability of more than $40,000,000.

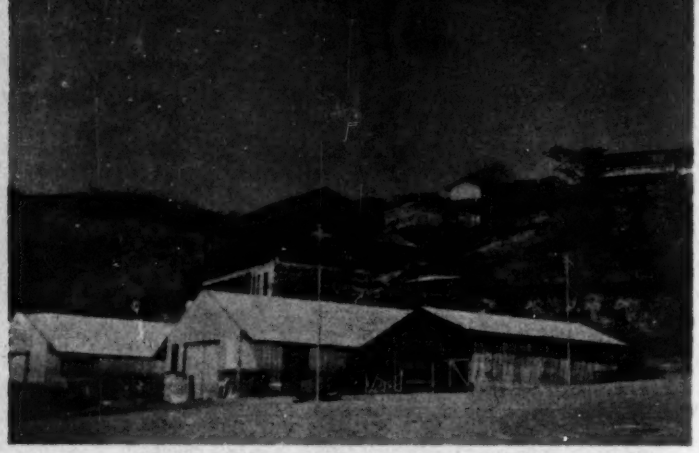
In reversing, seven to two, the lower court's ruling, Justice Burton's majority opinion said that the "damage to the mine owners was incidental to the government's lawful regulation of matters reasonably deemed essential to the war effort". Justices Harlan and Frankfurter dissented.

The companies who had sought compensation were Central Eureka Mining Co., Alaska-Pacific Consolidated Mining Co., Idaho Maryland Mines Corp., Homestake Mining Co., Bald Mountain Mining Co., and Ermont Mines, Inc.

JAPANESE STRIKE ENDS

The three-month strike of Japanese coal miners which recently ended has caused a loss in coal production of 2,500,000 tons. However, in common with most of the major coal-producing countries, Japan still has a surfeit of ordinary house coal and despite the strike stocks are now so high that the coal mines have been obliged to reduce output by 5 per cent during the period June-September. Knowing that stocks of house coal were high the strikers concentrated on stoppages in those mines producing gas and coking coals. This move was countered by the Japanese consumer industries contracting to import emergency stocks from Australia and the U.S.S.R.

The Russians are to supply 350,000 tons of special coal over the current financial year which ends in March, 1959, and in the same period 150,000 tons of Australian coal are to be imported. Orders such as this will be very welcome to Australian operators who are being hard hit by increasing competition from non-solid fuels.



Pilot Plant for Niobium Extraction at Panda Hill

THE installation of the pilot plant at the Panda Hill site of Mbeya Exploration Co. Ltd. was completed in September of last year. The pilot mill has a nominal capacity of 150 tons of ore per day. The present plant is in two sections, of 100 tons and 50 tons per day capacity respectively.

An Aerofall mill will also be installed for comparative testing in view of satisfactory trials. In 1958 approximately 10 tons per month of concentrates, containing 50 per cent Nb_2O_5, will be available for marketing, although pilot mill production could be increased to double this figure following the completion of test work and while, as a result of pilot operations, a production plant is designed and erected.

Simultaneously, mine development will be accelerated. Power for the future mill may be supplied by hydro-power from the Kiwira river, or, alternatively, from a coal concession between the Kiwira and the Songwe.

Mbeya Exploration Co. Ltd. is owned by N. V. Billiton Maatschappij (70 per cent) and The Colonial Development Corporation (30 per cent). Management is entrusted to Billiton.

The ore deposit forms part of Panda Hill, a bald knoll flanking the rift valley between Lakes Rukwa and Nyasa. The niobium deposit is a carbonatite containing pyrochlore as a niobium mineral. Niobium content in concentrates may vary between 50 per cent and 70 per cent Nb_2O_5; tantalum content averages about 1 per cent of the niobium content. The whole mass, covering an area of approximately 1 sq. mile, consist of this carbonatite.

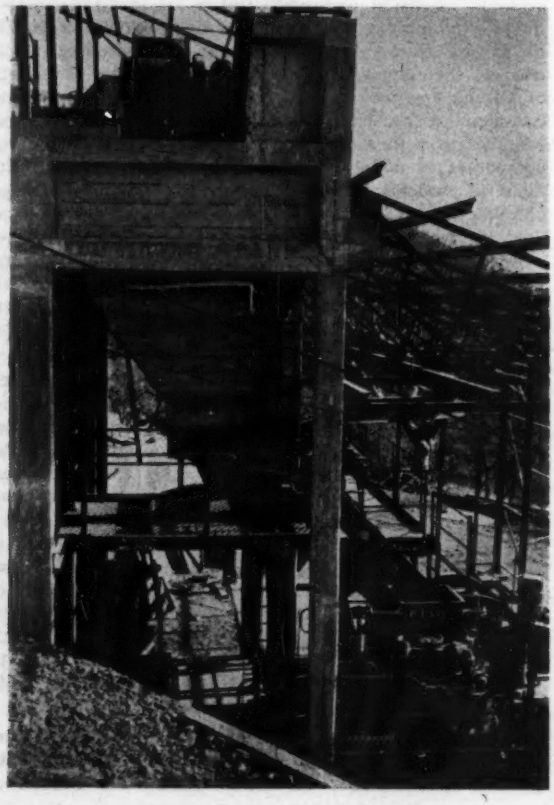
The ore can be compared to a medium hard limestone (Allis Chalmers grindability work index=10.3). After grinding through 30/65 mesh it is possible to discard a large percentage of gangue by gravity concentration. Further upgrading of the preconcentrates prepared in this way can be accompished by a combination of flotation and magnetic separation.

For final cleaning, it may be possible to employ a magnetizing roast followed by low intensity magnetic separation for elimination of iron oxides. By these methods concentrates containing 40 per cent to 50 per cent Nb_2O_5 can be prepared. Further purification to a content of 50 per cent to 70 per cent Nb_2O_5 can be effected by means of acid leaching.

Stirling-Astaldi (Tanganyika) were responsible for the construction of approach roads to the Panda Hill plant. This company also built the mill foundations and installed the machinery.

The pilot plant was officially opened on October 22, 1957, by the Hon. Alan Lennox-Boyd, M.P., Secretary of State for the Colonies.

Above is a general view of the Panda Hill pilot plant of Mbeya Exploration Co. Ltd. Below is the crusher unit, while alongside, at right, is a view of the crusher unit, seen in conjunction with the coarse ore bins



Malaya's Prosperity Depends on Tin

A Commission, with Mr. W. L. Payne, O.B.E., Barrister-at-Law, President of the Land Court of Queensland, Australia, as chairman; and Mr. C. N. Chandra, C.I.E., M.A. (Cantab.), Barrister-at-Law, India, and Mr. A. P. Mitchell, C.M.G., F.R.I.C.S., lately Director of Lands and Surveys and Commissioner of Mines, Uganda, Africa, as members, was set up by the Federation Government in February, 1957. In accordance with the terms of reference, its report covers the whole field of land administration and is worthy of close study by all who are concerned in such matters. This review is confined to those parts which directly relate to mining.

"APART from the substantial revenue it contributes to government, the contribution which the tin mining industry makes to the economic life of the nation is very great. Malaya would be much poorer indeed were it to be allowed to decline. And decline it must unless it is helped to find and obtain suitable tin-bearing lands to replace worked out mines. This makes it necessary to give applications for mining priority, as far as possible, when considering the use to which land can be put; Malaya cannot afford to have dredges and equipment idle. If idle resources are not put to use it is inevitable that they must be diverted or dispersed."

The foregoing emphatic confirmation of the representations made to government on numerous occasions during the past few years by the leaders of the tin mining industry in the Federation of Malaya, is contained in the report of a Land Administration Commission (Government Printer, Kuala Lumpur, M$3.50), which, although dated August 8, 1957, has only just been released.

It must first be realized that in the Federation of Malaya land is exclusively a State matter, and that without the consent of the States the Federal Government has no legislative or administrative authority concerning it.

The obvious disadvantages arising from a situation where the State Land Laws are diverse, were recognized by the Constitutional Commission (1957) and provision was made in the new Constitution for a National Land Council to formulate, from time to time, in consultation with the Federal Governments, the State Governments and the National Finance Council, a national policy for the promotion and control of the utilization of land throughout the Federation for mining, agriculture, forestry and any other purpose and for the administration of any laws relating thereto; and the Federal and State Governments shall follow the policy so formulated. This National Land Council should, in the opinion of the Commission, remedy the hitherto impossibility of the implementation of land reforms on a Federation-wide basis.

Need For Speedy Action

That there is no time to be lost in getting to grips with the present unsatisfactory position is stressed. The report states that major changes in the Constitution were envisaged to take effect on or about January 1, 1959, but if the Commission's recommendations are adopted it will not do to leave over their implementation until that date. Each month the position is growing worse and if unchecked will continue to deteriorate. The whole matter should be regarded as one of urgency.

It should be remembered that this was written in August, 1957. Since the report was released it has been disclosed that the National Land Council, comprising the Mentri Besar, or Chief Minister, of each of the eleven States and eleven members of the Federal Government has been established and has met twice to consider the Commission's proposals.

One of the difficult problems to be dealt with is that of the large areas set aside as Malay Reservations, designed to protect the Malay residents from inroads into small land holdings by non-Malays and money-lenders who make loans at high interest rates on the security of land. These advantages, point out the Commission, are accompanied by certain disadvantages to the Malays themselves.

The mining industry is discouraged from prospecting in the Reservations, and it is possible that, in this one matter alone, considerable damage could be done to the national interest, and the development of large sections of the nation retarded.

Malaya's Continued Strength

Malaya's premier position in the world as a producer of tin can, with foresight and prudent administration, be continued, and perhaps augmented for very many years, declares the Commission. Popular prejudices against mining arising from the scars left by newly-mined areas, and the alleged heavy silting of rivers, are stated to be wrongly conceived. It is pointed out that silting is now quite rare, owing to the effective control exercised over all silt disposal operations. The worst silting is found to be in rivers where there is no mining. Many rivers which drain purely agricultural areas were found to be heavily silted.

That Malaya owes its economic superiority over other countries in South-East Asia to tin mining more than anything else, is emphasized. Wherever mining commenced, progress followed. It seems to have been forgotten that pioneer tin mining caused the construction of roads and towns, which in turn gave a stimulus to agricultural development in the neighbourhood. The establishment of a mine opens up the surrounding country, therefore the mining industry is a major stimulant to the agricultural industry; some cases of conflicting interests may arise, but much agricultural activity is promoted, markets are created and money is circulated to the benefit of all.

The first railway was built in 1885 to connect the Larut tinfield with Port Weld. Without tin mining others would probably not have been built. Towns developed in tin mining localities. Kuala Lumpur, Ipoh, Taiping, Seremban and a number of other towns all owed their start to tin mining.

Malaya owes a debt to tin mining. What has been done can be repeated in the future but, states the Commission,

the administration of the Land Laws and Mining Enactment must be such as to give the opportunity.

Difficulties for capital investment grow each year, but they can be ameliorated by a more understanding administration, particularly in removal of the unreasonable restrictions which land administration is showing a tendency to impose. It is noted that rubber now supersedes tin as the best revenue producer, but the main rubber supplies come from areas opened up with the help of tin mining.

An interesting comparison of the revenue per acre produced by tin mining and agriculture is given. An average yield per acre from a tin mine is stated as 188.5 piculs, which at M$370 per picul would produce a gross value of M$69,745 and would yield to the Revenue in export duty M$10,470. A similar area would yield an average of 1,000 lb. of rubber, at a gross value at M$1 per lb., of M$1,000 and a revenue yield of M$123.75. These figures do not include premium and rent payable to the State.

Of course, the revenue derived from tin mining is non-recurrent whereas rubber provides an annual revenue. However, if the revenue yield of M$10,470 per acre from tin mining were invested at 5½ per cent, an annual income would be derived therefrom of M$575.85, compared with the M$123.75 obtained from rubber. Moreover, the worked-out mining land becomes available for agriculture. The immediate future is estimated to receive from tin mining in export duty M$50,000,000 annually and in income tax a further M$20,000,000 each year.

Tin's General Contribution

The Commission regard as more important still the contribution made by tin mining to the general economic welfare of the community, and estimates that for every one of the 40,000 normally directly employed, four or five find consequential employment in supporting industries, such as foundries, shops, garages, oil companies, wood cutters, etc. A large proportion of the country's electric power is consumed by the mines, thereby giving much additional employment.

Stress is laid on the small proportion of Malaya's area occupied by tin mining; only 1.27 per cent is alienated for the purpose, and only parts of that are actually mineral bearing. Yet tin mining provides some 15 per cent of the Federal Revenue.

The aggregate of possible mining areas is only some 1,000 sq. miles, or 2 per cent of the total land surface. This, says the Commission, demonstrates the small demand that mining is ever likely to make on the Public Estate, and should allay the unreasonable prejudices against mining previously mentioned.

The Constitutional Commission's recommendation that the States might be induced to regard tin mining with more favour if they were permitted to share in the export duty now wholly taken by the Federal purse, is endorsed.

Reference is made to the capital invested in tin mining. A gravel pump mine may be installed for as little as M$150,000, but a big dredge may need an outlay of over M$10,000,000 before it can begin to operate. Companies and men prepared to risk their money in a speculative enterprise such as tin mining, the success of which means so much to the community, are at least entitled to reasonably efficient administration and prompt decisions on their applications.

The interest displayed by the Federal Government in the development of mineral potentialities receives approval, and mention is made of an aeromagnetic and radio survey then being undertaken, and to preliminary prospecting carried out by the Mines Department. The report says that it cannot be too strongly stressed that past experience has shown that new mineral discoveries depend on the courageous and daring prospectors with the will, energy and persistence to go out on an unpredictable search and sometimes meet with success, perhaps through an element of luck.

A Measure of Criticism

The Commission regards with disfavour the practice, now prevalent, of granting permits to prospect, which carry no obligation on the State to reward a successful prospector with a mining lease over a selected area. They consider that in all cases where it is clear that there will be no objection to mining, a Prospecting Licence which guarantees that a mining lease will be granted should be granted at the outset. Permits or licences should only be issued to bona fide miners whose technical and financial resources ensure their ability to develop the area for mining.

The report is caustic on the question of the long delays which are common in the granting of mining certificates and mining leases, and the Commissioners could see no reason for such frustration. An efficient administration operating in accordance with the recommendations made in the report should have no difficulty in removing the problems.

The International Bank Mission to Malaya in 1955 recommended that a Permanent Mining Committee should be set up in each State to deal with mining applications. The Constitutional Commission early in 1957 made a similar recommendation. Now the Land Administration Commission advocates the same thing, but does not consider that reference to the Committee is necessary in any case where there is no conflict of interests or a likely divergence of departmental views.

Additional Recommendations

The Commission makes the following additional recommendations:

(a) There should be an implied right to renew a mining lease on expiry; the term of renewal to be sufficient to permit the remaining mineral to be extracted.
(b) So far as possible the lessee should be permitted to retain the lease under terms no more onerous than those contained in the original lease.
(c) When leases are being aggregated, aggregation permits should be granted to expire with the term of the lease having the longest life. (At present, the usual maximum period of an aggregation permit is five years.)
(d) The lessee should be permitted to renew mining leases covering mining buildings, even when the particular lease has been worked out, so long as the buildings are being used for the working of other mining lands in the neighbourhood. (The current practice is to refuse renewal in such cases. The miner then has to apply for a new lease of State lands for the area on which the buildings are situated.)
(e) Unreasonable rehabilitation conditions should not be imposed on new leases. The cost of rehabilitating mining land should be defrayed from a Mining Lands Rehabilitation Fund which the Federation Government intends to establish; such funds to be financed by a small cess on all tin exported and to be administered by the Federal Government.

The tin mining industry hopes that the present control on tin exports will not be considered as any reason for allowing the stress on the urgent need for reform to pass unheeded.

At right is a close up of some of the rubber-lined tanks in the uranium oxide extraction plant at the Harte-beestfontein mine

Rubber Linings in Uranium Production

ONE of the major problems of uranium extraction is the protection of plant from acid corrosion and abrasion. Resulting from various experiments conducted by the Transvaal and Orange Free State Chamber of Mines, it was decided that the necessary anti-acid protection would be achieved by lining uranium extraction plants with rubber. The various rubber lining techniques developed as the result of this decision proved successful, not only in relation to the South African uranium project, but also set a pattern for Canada and Australia, where the experience gained on Transvaal and Orange Free State mines paved the way for the construction of uranium extraction plants in these other countries.

Various anti-acid protective measures for the lining of chemical plants were tried by the Uranium Technical Sub-Committee of the Transvaal and Orange Free State Chamber of Mines, including the possible use of wood, acid resisting brick, glass, sprayed compounds and stainless steel. Ultimately, after investigating the various methods used in Canada and America on chemical resisting mediums, it was considered that rubber-lined mild steel tanks and pipe-work would be the most suitable type of equipment for use in South Africa.

At this stage, in 1951, the Dunlop Rubber Co. had been conducting experiments in rubber lining processes and techniques in conjunction with the Chamber of Mines. As the result of this work the company was given the go-ahead to handle the lining of at least four of the uranium plants then contemplated. This initial task comprised the lining of 750,000 sq. ft. of tank surfaces with acid-resisting rubber—an area of over 10 acres—and similarly treating 100,000 ft. of piping, over 1,000 pumps, agitator units and miscellaneous equipment, on mine sites as far away as 132 miles from the Dunlop factory at Benoni.

The magnitude and complexities of the undertaking can be gauged by the size of the tanks which had to be lined, some of which were 45 ft. high and 22½ ft. in dia., and others 12 ft. high and 50 ft. in dia. Approximately 323,000 sq. ft. of rubber lining work was to be executed on the mine sites, and 132,000 sq. ft. at the Benoni factory. Apart from the technical rubber lining difficulties involved the success of this major project—which was to pave the way for the establishment of new world standards in rubber lining techniques—depended in large measure on the effective sandblasting of the surfaces to be rubber lined, fume extraction from the great tanks during lining and the bonding of rubber lining to the interiors of pipes and valves.

Atlas Copco portable compressors were used at the mine sites and extensively at the Benoni plant for sandblasting, solvent fume extraction, ventilation, pipe lining and many other tasks. In addition to the difficulties imposed by the intricate scaffolding required inside the tanks for the sandblasting and rubber lining operations, sandblasting was further complicated by the lift of sand entailed in blasting the surfaces of the 45-ft. high tanks.

One of the most important and unusual tasks employing compressed air during "Operation Rubber Lining" was that of ventilating the tanks during the lining process. After sandblasting and during lining, the tanks were protected from rain and dust by heavy sectional canvas roof covers. The rubber lining solutions were highly toxic and inflammable, and the urgent problem that arose of protecting the men working inside the covered tanks and providing them with safe fume disposal and adequate supplies of fresh air was overcome by the development of compressed air ventilation systems operated by Atlas Copco compressors.

Back at the Dunlop factory at Benoni compressed air played a major role in the rubber lining of tens of thousands of feet of piping and thousands of separate smaller items of equipment for the uranium extraction plants. Apart from sandblasting, compressed air was used extensively in effecting efficient bonding of rubber lining to the inside surfaces of pipes by means of an ingenious pneumatic expander specially developed for the work. Consisting of a horizontally-operated rubber bellows fitted to the end of a long metal compressed air tube the expander, after insertion into the previously treated piping, achieved maximum bonding of rubber liners and adhesives to the interior pipe surfaces by means of compression expansion. The process also expelled all air between the metal and rubber liners. In the final vulcanizing process compressed air acted as a coolant after the steam treatment.

At that time Dunlop operated two Atlas Copco compressors at the Benoni plant—an AR 3 and an AR 4. A second AR 3 is at present being installed, giving the Dunlop compressed air plant a strength of three Atlas Copco units. Emerging through difficulties and problems of the technical unknown the first four South African uranium extraction plants were successfully completed on schedule by October, 1952.

From 1951 onwards the Dunlop Co. in South Africa has processed over 60 acres of rubber lining, involving the use of 1,600 tons of rubber, on 13 uranium extraction plants on the Transvaal and Orange Free State goldfields.

The Liege Coal Preparation Congress—I.

The third International Coal Preparation Congress was, as previously noted, held in Liège from July 23-28. Engineers from all over the world welcomed the opportunity to combine a visit to the Congress with one to the Brussels Exposition and over 800 members from 23 countries registered for the Congress, which was held in the new Palais des Congres at Liège.

THE organization of the technical side of the Congress was excellent. A total of 64 papers was presented. Each had to be translated into at least two languages and 1,800 pages of text were printed.

It was intended that the papers should be grouped according to main subjects, each group being briefly summarized by a rapporteur before the discussions. Unfortunately, as often happens, some of the rapporteurs and authors of papers were unable to confine themselves to a few brief remarks but insisted in reading the whole of their papers although these were in the hands of the members. Consequently, the amount of discussion was negligible and much of the value of the Congress was lost.

Coal in Coke Ovens and Power Stations

The first day was given to two groups of papers. The first, entitled "Coal Preparation in Relation to its Use in Coke Ovens", comprised one French, two German, one Dutch, one Belgian and one British paper on practice in the various countries. The French paper, by Loison, one of the acknowledged experts in this field, discussed the effects of ash, sulphur and moisture on the operation of coke ovens. Detailed estimates of cost were given in each case, an example being the calculation that an increase of 1 per cent in the sulphur content increases the consumption of coke in the ovens by 3 to 4.5 per cent. Further detailed figures on the effect of moisture lead the author to believe that it would be desirable to dry coking coal to a lower moisture content than at present, even though most such coal is already thermally dried in France and average moisture to the users does not average more than 6/7 per cent.

Lemke, in his paper on German practice, reached rather similar conclusions although he was more cautious about giving definite figures. Schranz, in the second German paper, described experiments made with impact crushers on high volatile coals. It appears from these experiments that the coke produced from coals crushed in this way is of better quality than normal. Bakels, of Holland, also produced cost figures for variations in ash and moisture content but his costs are based on Dutch practice and it is difficult to relate them to those in other countries. The Belgian paper gives more detailed costs but points out that Belgian coals do not produce any technical difficulties in the coke ovens.

Howard Griffiths, in the British paper, discusses the difficulties in producing high-grade coking coals without the use of wet cleaning, usually by dense medium, and gives current specifications for British coking coals. He states that the desirable moisture content is considered in the U.K. to be 7/8 per cent.

In their summary of this group, Reerink and Lemke conclude that it is generally profitable to reduce the moisture content of the coal but that it is not easy to generalize about the economics of ash and sulphur reductions.

The second group comprised five national papers on "Coal Preparation in Relation to its Use in Power Stations". In their paper on British practice, Jenkins and Booth point out that the electricity industry is not integrated with the coal industry as it is in many countries and power stations are, in the U.K., often located some distance from collieries. It is usually uneconomical to transport low-grade fuel. In many cases, the most economical fuel is untreated smalls although several plants have been installed to wash small coal for power station use.

In Germany, on the other hand, high ash middlings are extensively used for boilers, Blass *et al.*, saying that the limiting ash content is about 68 per cent. They recommend washing German coals at 2.2 to remove the pure dirt. In France, also, high ash middlings are extensively used. Nonat says in his paper that particles with an ash content of higher than 75 per cent should be rejected and gives figures showing that the sale of untreated smalls in France is definitely uneconomical.

In his opinion, washing of the smalls should be followed by flotation and thermal drying of the concentrates for the best results. The Belgian authors, Ligny and Haumont, disagree with this. They say that the profitability of washing depends on the ash content of the coal and that it is sometimes more profitable to sell unwashed smalls. They say that raw coal containing more than 62 per cent ash cannot profitably be cleaned but may be used as it is. In his summary Van Os, Holland, points out that "low-grade" fuel is not a semi-waste product and that its value should be considered in all preparation plant schemes.

Preparation of Raw Coal

Tuesday morning was devoted to a session on "Preparation of Raw Coal Before Washing", with Mr. H. A. Longden, Production Director of the N.C.B., in the chair. The papers in this section were rather mixed. Two German papers described partial preparation plants underground and gave detailed cost figures which should be valuable in the consideration of similar projects elsewhere. It is clear that underground plants may often give a considerable advantage, particularly when winding capacity is limited.

Hall and Macpherson (G.B.) described experimental work on moisture reduction and showed a film depicting the effect of small additions of oil on handleability of flotation concentrates. Verhoef and de Koning, of Holland, described a new dry shale extractor with leaf springs for removing shale larger than 80 mm. Members considered this ingenious but wondered about wear.

Bandig *et al.* (Belgium) discussed the advantages of dry and wet cleaning. In Belgium it is not uncommon to dry smalls thermally before treatment by dry methods, as opposed to the normal practice of wet screening and wet treatment. The authors conclude that coking coal is better treated wet, but that there is little difference in the case of industrial coals. Jean (France) described the use of heated screens in France. Results seem to indicate that such screens are valuable where the fines can be sold untreated but that if it is necessary to wash the fines there is little or no economic advantage. As coal gets wetter at the coal face it seems likely that the economic limit of heated screens will soon be reached. Pozetto and Verbaere (France) described in a short paper a new pneumatic dedustor with an electromagnetic distributor and Packard (U.S.A.) described methods used in the United States for stocking and blending coals prior to washing. Tuesday afternoon was spent on visits to washeries in the Campine coalfield in Belgium.

(To be continued)

Machinery and Equipment

Aluminium Derrick for Prospecting

A folding aluminium-alloy derrick is one of the features of a mechanical jet drill mounted on a Land-Rover, designed and manufactured in the U.K. for use in mineral prospecting by French geologists in West Africa.

Normally, hand-operated drills of a type which breaks down into 60 lb. headloads for transportation, and which requires a crew of ten or eleven men, are used on such expeditions; so where native labour is very cheap and plentiful they are ideal, but with the rising living standards of many natives they are becoming uneconomic. This new unit, which requires only a crew of five, is equivalent to four hand-drills, and is expected to bore between 180 ft. and 240 ft. per day in areas where drilling depths are unlikely to be greater than 30 ft.; designed by Dr. J. R. F. Joyce and built by Davenport Vernon Ltd., it offers a quicker and cheaper method of drilling that is suitable for most minerals.

The drive-head consists of a cast-steel block (the hammer) weighing 250 lb., which forms a loose-fitting sleeve about a 2¼ in. dia. tube which is fitted with upper and lower stops to contain the block. The lower stop is a 5¼ in. dia. pallet to which the drive-pipe is screwed prior to the commencement of drilling. The hammer is attached by cable to an automatic winch, which is connected to a rear power take-off drive through an electrically operated clutch. The cable operates through a system of pulleys that provides the necessary back tension to enable the winch to pick up the hammer and the latter to operate at various heights.

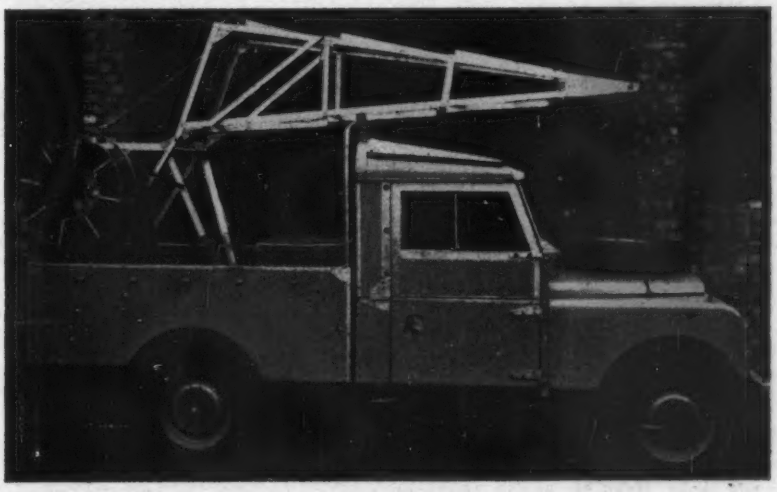
When the hammer falls—through a distance of 2 ft. 6 in.—it strikes the pallet at the lower end of the drive-head and causes a travel switch, attached to the top stop, to close; this completes an electrical circuit and so energizes the clutch operating the winch, which then raises the hammer until it touches the switch, breaking the circuit, and making the hammer fall again. The rate of operation is designed to be 60 blows per minute, but by varying the engine speed a range from 40 to 80 blows per minute may be covered.

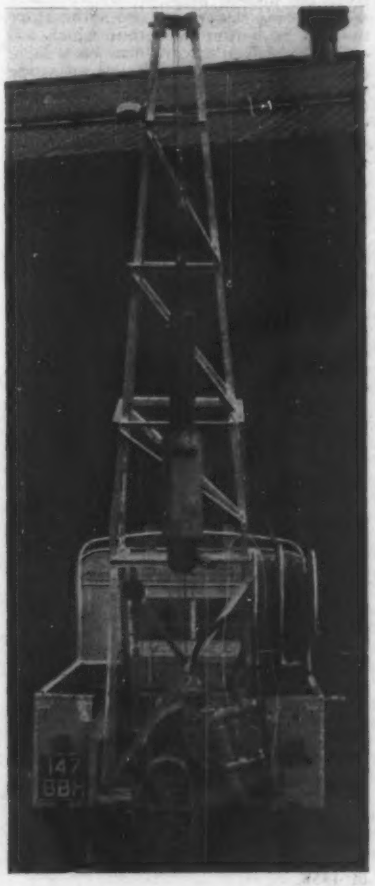
In order to carry the derrick, drive mechanism, winch and pumping equipment, and also a 60-gallon water tank, the vehicle was specifically modified to increase its payload by welding stiffeners on the underside of the chassis and fitting supplementary rubber springs to those at the rear. With a load over the normal maximum, weight saving, wherever possible, was of prime importance and so the use of aluminium alloy for the derrick was considered essential; using Noral B51SWP—an alloy with a high strength/weight ratio, supplied by Northern Aluminium Co., who also assisted with the design of the structure—the weight was only 80 lb. This showed a saving of 60 lb. compared with an equivalent tubular steel derrick, and kept the total load on the chassis just below the maximum allowable. An additional advantage gained by using aluminium is that the structure is used unpainted, as the natural oxide coating on the metal protects it from all weathers and renders painting unnecessary.

The derrick, which is 14 ft. high when extended, is constructed of 1½ in. by ⅛ in. angle. Reinforced at certain points with 6 S.W.G. sheet, also of Noral B51SWP, it is fastened with anodized-alloy bolts secured with self-locking nuts. It is bolted to the chassis through a base-plate at six points where the tops of the chassis members have been specially built up to ensure that the structure is firmly anchored. While the vehicle is travelling, the upper portion of the derrick is folded over the cab and secured by an elastic rope to the spare-wheel mounting on the bonnet.

An auxiliary trailer tank of tank-chassis construction, with a capacity of 250 gallons, provides ample water for two to three days' drilling, provided the correct water-recovery procedure is followed; it also carries 200 ft. of drive pipe.

Below is the upper portion of the drilling unit derrick, folded over the cab of the truck. At right, rear view of the unit, as rigged for mineral prospecting. The derrick is in the vertical position with the hammer suspended from it





LAMINATED P.V.C. MAPS

Laminated P.V.C. charts and map sections have been produced by Bribond Ltd. Commercial developments of the process now incorporate multi-coloured paper prints, calibration charts for industry, dials, and numerous other printing applications. The charts, for radar calibration purposes, had to be printed accurately within 0.005 in. It is believed that the manufacturing process has not been carried out in this country before.

Construction was of thick clear astrafoil sheet, thick opaque white astrafoil sheet, printed with graphs and calibration curves on both sides, and a clear astrafoil sheet backing. These were bonded together with a special adhesive developed by the company, and which welded all the P.V.C. laminates together, but did not cause the printing-ink image to distort or bleed.

Contracts have involved the production of survey maps, sectionalized into eight areas of the United Kingdom and used for navigational aid and the location of airports. In this instance, the existing paper maps were used instead of white opaque printed astrafoil and the maps were then bonded to thermosetting

laminated plastic for mounting. The bonding of the maps and charts was carried out in a steam-heated multi-daylight platen press. Maps of this type have obvious applications in the mining industry.

HYDRAULIC MINING IN WALES

A new system of getting coal is to be tried out in Britain in an experimental installation of hydraulic mining at Trelewis Drift Mine, near Treharris, Glamorgan. In the initial trials coal will flow from the face into an open channel or flume and be carried to a screen, where all coal above 2 mm. in size will be separated and transferred to the normal conveyor-belt system; the slurry will be pumped up a 6 in. dia. pipe to the surface of the drift mine, where the fine coal will be removed and the clarified water returned to the system. If the trials prove successful, steps will be taken to pump lump coal through the pipeline to the surface.

Mining at Trelewis is on the room-and-pillar system in which headings or roadways are driven through the coal, leaving large pillars which can either be left for support or partially or completely removed as operations move backwards down the headings. The drift is 1,030 ft. long and goes down at a gradient of 1 in 4 to a point where it meets the 5 ft. 9 in. thick Brithdir seam, which in turn rises at a gradient of 1 in 14 and extends to a distance of about 2,000 ft.

Only the headings have been driven at this mine, and it is proposed to start hydraulic mining on the pillars, starting from the highest point of the boundary and working backwards down the slope towards pit bottom, a method which will assist the broken coal to flow back more easily. The monitor will be placed at the end of a heading and its ¾ in. dia. jet will be projected at each side of the coal walls in turn. The Brithdir coal is of medium hardness, and although it contains some bands of stone, it is not anticipated that there will be any difficulty in removing it from the seam with the pressures available. It has been estimated that water pressure of 600 lb. p.s.i. is sufficient to break down the softer coals, and pressures up to 1,200 lb. for the hard and denser coals.

Only four men are needed to work each monitor, one to control the monitor and the others to attend to the pipes and flumes and fix supports. Russian experience suggests that production can be as efficient as in opencast mining, or between three and five times higher than with conventional methods.

The hydraulic mining project is a natural sequel to the N.C.B.'s interest in the hydraulic transport of coal by pipeline. Work at two installations, one at Woodend Colliery in the West Lothians, where coal is being pumped up a vertical shaft, and another at Markham Colliery, Derbyshire, where the haulage of lump coal through a 1,000 ft. long pipe on the surface is being studied, will continue. The main object of these two experiments is to develop more efficient methods of pumping and of transferring coal into a pipeline without losing pressure. The Trelewis project could be adapted for a hydraulic haulage system up the drift to replace the existing conveyors if the experiment in hydraulic mining proves successful.

The cost of the trials is estimated to be £48,000 over a six-month period, and mining is expected to begin at the end of 1958.

MINING MISCELLANY

A report this week states that South African shaft sinkers have broken British shaft sinking records by blasting and lining 272 ft. of one of the Parkside (Lancashire) coal mine shafts in one month. Flown to England last September by the Roberts Construction Co., the team of 17 sunk and lined 272 ft. of one shaft and 260 ft. of another during June. Mr. C. McLauchlan, the South African technical adviser, predicts that still better results will be achieved now that the team is better organized. He expects the team to reach the contract depth of 2,595 ft. in about nine months. The main contractors are Kinnear Moodie and Co. Ltd.

★

Great Boulder, the famous Kalgoorlie gold producer, is to carry out a very large haulage improvement work in the conversion of its steam-winding plants to electric power, at a cost of £A250,000. The shafts to be re-equipped are Edwards (3,250 ft. deep) and Hamilton (3,230 ft.). These shafts are connected by the main haulage and service level at 3,100 ft. The diesel-electric power plant will be increased by a 915 kW. alternator set now on order. The modified winding engines will be of 1,000 h.p. each and the increased mine generating capacity will be 5,300 kW. All equipment is being supplied by British and Australian manufacturers. Since 1950, the company has spent £A400,000 on power plant and electrification.

★

The U.S. Senate has passed and sent to the White House a Bill to extend the domestic minerals exploration programme for another year. The Bill passed the House of Representatives in May. The programme permits the Interior Department's Defence Minerals Exploration Administration to finance new contracts to seek new domestic sources of tungsten, asbestos, fluorspar and columbium-tantalum. The programme expired on June 30, except for contracts in existence, but under the new Bill would be extended until December 31, 1959. Since the programme began in 1951, the Federal Government has advanced more than $33,000,000 to finance exploration for minerals in 43 states and Alaska.

★

A new copper mill installed in the Philippines by Philex Mining Corporation will begin production shortly. It will handle ore mined from the corporation's Santo Tomas II property near Baguio City in Northern Luzon. The daily capacity will be 1,500-2,000 tons.

★

India will receive $20,000,000 from the United States' Asian Economic Development Fund. The loan will be repayable in Indian currency in thirty-one half-yearly instalments, beginning three years after the disbursement with 3½ per cent interest. It will be used to develop iron-ore mines in the Rourkela area (Orissa) and to build a railway line and improve facilities at Vishakapatnam port to increase iron exports to Japan. The project, estimated to cost $66,000,000, is a joint venture between the United States, India, and Japan. Japan has already agreed to make available $8,000,000 in credit for the purchase of equipment in Japan.

★

The United States Department of the Interior has called for tenders for constructing new research facilities for the Bureau of Mines at Fort Snelling, Minn., on the Mississippi River adjacent to Minneapolis and St. Paul. Congress has appropriated $1,719,000 for the new laboratory, which will provide space needed by the Bureau for expanding its mining and metallurgical studies on manganese, iron, nickel-copper-cobalt ores, and other mineral resources of the North Central states.

★

Properties believed to contain the largest known commercial surface deposit of sulphur in the United States are to be developed by Mercury Electronics Corporation. The claims, known as the Crater Group, are located in Inyo County, California. They are stated to have a reserve of 1,453,000 tons. With the properties was acquired a licence under a new "hydro-thermal" process for refining sulphur. Hitherto the deposit has lain dormant for want of a refining process that would be commercially feasible. Pilot-plant test runs have been completed and plant construction will shortly start.

★

The Yawata Iron and Steel Co., the largest steel producer in Japan, has stated that Japanese steel mills may buy large amounts of coking coal from Australia, to fill a gap created by the suspension of coal imports from Mainland China. Rupture of trade relations between the two Eastern countries in mid-May disrupted a plan whereby Japanese steel mills were to have imported a total of 400,000 tons of coking coal from the Chinese mainland under a private agreement signed in February this year.

★

Japan is expected to import three Russian turbo-drills at a total cost of $30,000. The contract, which awaits the approval of the Japanese Government, was signed on June 3 by the Nikkyo Trading Co. and a visiting representative of the Soviet Machinery Trade Corporation.

★

China would buy Australian zinc if investigations showed that the price and terms of sale were satisfactory, the leader of a Communist China trade delegation, Mr. Wang Nien-Tsu, stated in Melbourne.

★

The year 1957 was the first full year of occupation by the Northern Rhodesia Department of Geological Survey of its new headquarters. This enabled considerable progress to be made in the technical sections, particularly the laboratory and drawing office, and for the first time it was possible to organize the library and technical records section. Progress was considerably hampered, however, by an acute shortage of technical staff, particularly field geologists.

★

What is claimed to be a valuable discovery of some rare-earth elements has

been made in California by two prospectors. A new company, Rare Earths Inc., has been incorporated in Ohio to exploit the find.

*

A new organization known as the Britain in Europe Committee has been formed by leading men from all sides of industry, finance, and commerce, to stimulate interest in Britain's participation in the proposed European Free Trade area.

*

The Prime Minister of Pakistan, Malik Firoz Khan Noon, has directed the Atomic Energy Commission of Pakistan to undertake an extensive survey of the likely areas to find out the source, extent and quality of the country's radioactive minerals. Survey teams are to be organized and sent first to the tribal areas.

PERSONAL

His Majesty King Gustav VI Adolf of Sweden has conferred on Mr. C. W. Robinson the decoration of Chevalier First Class of the Royal Order of Vasa in recognition of his services to Sweden and Swedish interests. Mr. Robinson is Honorary Consul for Sweden and managing director of Uddeholm Ltd., of Birmingham.

*

Mr. E. D. Shearn has been elected chairman of the Council of the Malayan Chamber of Mines, and Mr. J. N. Davies, vice-chairman.

*

Mr. N. K. Kinkead-Weekes and Mr. G. W. H. Relly, previously assistant managers of the Anglo American Corporation of South Africa Ltd., have been appointed managers.

*

The death occurred suddenly in Kalgoorlie of Mr. A. A. McLeod, a member of the board of North Kalgurli (1912) Ltd. and the company's general manager in Australia.

*

Mr. John Grimston, M.P., Enfield Rolling Mills, has been re-elected president for the coming year of the British Non-Ferrous Metals Federation. Dr. M. Cook and Mr. W. W. Dolton have been re-elected vice-presidents and Mr. W. F. Slater and Mr. M. J. S. Clapham have been elected vice-presidents. Mr. A. L. Johnson has been re-elected treasurer.

*

Mr. Anton Gray, a member of the Institution of Mining and Metallurgy, will deliver the fourth Sir Julius Wernher Memorial Lecture on Monday, September 22, 1958 — the evening preceding the opening of the Symposium on the Future of Non-Ferrous Mining in Great Britain and Ireland. The subject will be "The future of mineral exploration".

*

Lord Skelmersdale has resigned from the board of Mason and Barry Ltd.

*

Mr. F. Foster has been appointed managing director of Crompton Parkinson (Stud Welding) Ltd., a recently formed subsidiary company of Crompton Parkinson Ltd.

*

Further appointments to the newly formed A.E.I. heavy plant division, managed by the British Thomson-Houston Co., are: Mr. I. A. Ferguson as manager, large electrical machine sales; Mr. P. S. Clayton, manager, power rectifier sales; and Mr. J. B. Siddaway, manager, compressor sales.

COMPANY EVENTS

Jefferson Lake Sulphur Co. and Duval Sulphur and Potash Co. have joined Sulphur Export Corporation to market their sulphur outside North America. Sulphur Export was formed in May by Freeport Sulphur Co. and Texas Gulf Sulphur Co. under the Webb-Pomerene Act, which permits companies within an industry to join in transacting their sales abroad. With the inclusion of the two companies, Sulphur Exports now handles overseas sales for all U.S. producers of sulphur mined by the Frasch process.

*

Sir David Eccles, President of the Board of Trade, was the guest of the Lead Development Association on July 8 at the inauguration of the Association's new premises in Adam Street, London. The association was formed in 1954 by the leading Commonwealth lead producers, all of whom were represented at the function.

CONFERENCES AND EXHIBITIONS

The 1958 Mining Show of the American Mining Congress will take place from September 22 - 25 at San Francisco, California. The focal points of activity will be the Civic Auditorium and the recently completed Civic Centre Exhibit Hall, where both the exposition and the general and technical sessions of the Convention will be held.

*

The sixty-fifth annual general meeting of the Institution of Mining Engineers will be held in London on January 29, 1959. The Institution's summer meeting will take place at Olympia, London, from July 15-17, 1959, and will be a symposium on shaft-sinking and tunnelling.

*

There will be a meeting of the North of England Institute of Mining and Mechanical Engineers at Newcastle upon Tyne on August 8, 1958.

*

General meetings of the Institution of Mining and Metallurgy will be held on October 16, November 20 and December 18, 1958; and on January 15, February 19, March 19, April 16 and May 21, 1959. The annual general meeting will take place on May 21.

A Vickers Vigor with torque convertor, fitted with front cable dozer, in operation at the Bukit Besi iron ore mine, Malaya

CONTRACTS AND TENDERS

Through one of its subsidiaries, Simon-Carves (Africa) (Pty.) Ltd., of Johannesburg, Simon-Carves has received an order approaching £400,000 for a pyrites-burning sulphuric acid plant to produce 120 s.tons of acid per day. It will be built for Harmony Gold Mining Co., a member of the Central Mining group. Harmony is the second Central Mining Co. for which a Simon-Carves sulphuric acid plant has been ordered in recent years. The first was Blyvooruitzicht, for which a similar plant of 134 tons capacity was completed in 1956.

*

An ore-pelletization plant with an annual output of 60,000 tons is to be built by Krupp in Pakistan. The plant is to feed the steel furnaces, which will also be supplied by Krupp. The integrated steelworks is scheduled to start operations by 1960. The total cost is estimated at £17,000,000.

*

A contract valued at £247,345 for building the new Mining Thermodynamics and Nuclear Power Laboratory at Nottingham University has been awarded to Richard Costain Ltd. The laboratory, which is the first stage in a larger development, is due for completion towards the end of 1959, but part of the building will be handed over for occupation in mid-year.

Metals and Minerals

Manganese for Rice and Maize

The manganese ore shipment market remains in a very depressed condition. For months prices have been progressively weakening and for 48 per cent material dealers' ideas now range from 80d. to 90d. per l.ton unit c.i.f. Europe. Even at present low levels, and taking into account the very steep fall from around 140d. nearly 18 months ago, the possibility of further trimming cannot be disregarded. Manganese ore was previously quoted at around present levels in the summer of 1955.

Though some of the latest downturn is attributable to a further easing in freight rates, the demand-supply situation has also played its part. Consuming countries generally are still well covered, marginal requirements being thus at the irreducible minimum. Though there are hopes that demand will begin to pick up in the autumn, it seems evident that there can be no substantial improvement without a corresponding improvement in world steel activity.

Meanwhile it is hardly surprising that in some countries producers, unable to dispose of their ore on the market, are letting their minds dwell increasingly on the possibilities of barter deals. Thus the Manganese Ore Producers and Exporters Association in the Philippines has welcomed a move by the government to allow mining companies to barter their high-grade ore. Philippine producers claim that, through barter arrangements, they could manage to maintain operations and provide continuous employment for their present workers.

Past experience has shown, however, that barter deals are by no means easy to arrange and negotiations are liable to be extremely protracted. In New York, it is believed that chances for a U.S.-Indian manganese ore barter agreement are now more favourable. It is understood that India would like to furnish some 250,000 tons of ore, which would be mainly of 42 per cent grade, but with some 44 per cent and perhaps 46 per cent included. The U.S., however, is said to desire no more than 150,000 tons of the 42 per cent ore.

Mr. A. T. Gupta, chairman of the West India Minerals Association, has sharply criticized the Government of India for not having eliminated the export duty on manganese ore. Stating that its elimination would have made Indian ore competitive in world markets, he pointed out that Brazil's prices were $6 per ton lower than those of India for the same grades and qualities.

Mr. Gupta also criticized the State Trading Corporation for buying a large quantity of manganese ore from mine-owners and exporters purely on a speculative basis, without having export contracts with foreign buyers. He alleged that nearly 150,000 tons of manganese ore of all grades purchased by the Corporation was still lying around, because the Corporation was not taking delivery. The result of this policy, he declared, would be that the Corporation would have to suffer a loss of 400,000,000 to 500,000,000 rupees.

It is reported from Tokyo that negotiations with the United States for exports of Japanese ferro-manganese for stockpiling, in a barter deal against imports of American surplus wheat, have ended in failure, because Japan could not meet the deadline of June 30 for shipping the metal involved. It is said that Japan could have sold at least 30,000 tons of ferro-manganese under the deal.

*

From August 31, when all outstanding orders will have been produced, manganese mining operations are to be suspended by the South African Minerals Corporation. In making this announcement, the directors stated that operations could be restarted at short notice and would be resumed on the return of more favourable market conditions.

*

Recently some Russian 48 per cent ore was reported to have been sold to Japan at a price equivalent to 82d. c.i.f. A few years ago Russian output was placed at between 2,000,000 and 3,000,000 tons annually. No reliable statistics of current production are available, but presumably output has considerably increased.

Sooner or later more prosperous times will, of course, return for the manganese industry, but the immediate outlook can scarcely be described as encouraging.

WILLIAMSON DIAMONDS

A report from Nairobi states that the capital of Williamson Diamonds is being disposed of equally to the Tanganyika Government and De Beers Consolidated Mines. As we go to press this announcement cannot be officially confirmed in London, but it is known that discussions along these lines have been in progress.

The capital of Williamson Diamonds is £600,000 in 1,200 shares of £500 each, all of which are issued and fully paid. Earlier this year, it was reported that Dr. Williamson had bequeathed the majority of his shares to his brother, Mr. Percy Williamson, and to his sister. The Mwadui Mine employs some 6,000 workers and produces diamonds to an annual value of some £2,750,000 to £3,000,000, about 45 per cent of the output being of gem quality. This famous mine is responsible for 90 per cent of Tanganyika's output of diamonds and 9 per cent of annual world sales.

INCO'S THIRD CUT

In view of the present stock situation in the United States, the announcement that International Nickel is making another curtailment in nickel production, effective July 14, can have occasioned little surprise. The two previous curtailments in March and in May, 1958, lowered the company's nickel output to a rate of approximately 125,000 s.tons a year. The third cut will bring the annual rate down to approximately 100,000 s.tons.

Since the curtailment in May, stocks of unsold nickel in the company's hands and in the hands of the United States Government have continued to accumulate and now total about 67,500 s.tons, exclusive of nickel in the United States Government stockpile and of unconsumed nickel in the inventories of customers. In the circumstances INCO had no alternative but to reduce its production to a rate more nearly in line with deliveries. The company's nickel production capacity at Sudbury exceeds 150,000 s.tons annually and full production can be resumed with a minimum of delay.

INCO's confidence in the long-term outlook clearly remains undiminished, for the announcement emphasizes that the curtailment of production will not affect the new project at Thompson in Manitoba, which is scheduled for completion in 1960 and will have a capacity of 37,500 s.tons annually.

Apart from nickel, the two previous reductions also affected the company's output of copper, platinum, and other metals, and presumably this will again be the case.

NEW TITANIUM ALLOY

Crucible Steel Co. of America reports development of a new "beta" titanium alloy claimed to represent a "major breakthrough" for the titanium industry. The new product, B-120-VCA, is one of three new heat-treatable titanium-base alloys that Crucible is now producing in limited commercial quantities. More than one-quarter of its content consists of the alloying elements, vanadium, chromium, and aluminium. The new grades are expected to find wide use in the advanced aircraft now being developed; the Beta alloy in particular holds great promise for applications in guided missiles, where savings of pounds of weight mean hundreds of miles of increased range.

WOLFRAM SLIPS FURTHER

Further weakness has been reported this week in the London wolfram ore shipment market. For minimum 65 per cent material a price range of from 64s. to 67s. is now mentioned, compared with 66s. 6d. to 70s. previously. It is understood that a deal has been done at the lower end of the range. The demand for ferro-tungsten remains unimpressive and the heavy unsold stocks in Europe continue to overhang the market. A substantial improvement in demand is needed if stocks are to be reduced to a more manageable level in a reasonably short space of time.

NORWAY'S NEW SMELTER

Norway's new aluminium smelter, Mosjoen Aluminium A/S (MOSAL) was officially inaugurated on July 10. The plant, which went into operation last March, has now reached full production —i.e. about 20,000 tonnes a year. It has been so designed that capacity can be expanded to about 30,000 tonnes an-

nually by relatively small additions to existing facilities, if and when additional supplies of electric power become available. There are tentative plans for further expansion of capacity to nearly 100,000 tonnes a year. Production has been sold ahead for ten years, all of it for export.

ZIRCONIUM VERSUS STAINLESS

The results of an extensive scientific study on the economics of zirconium versus stainless steel as a cladding and structural material in nuclear power reactors have been released by Columbia-National Corporation. It was made for the company by Dr. Manson Benedict, head of the Nuclear Engineering Department of Massachusetts Institute of Technology.

It was found that the low neutron absorption of zirconium gives this material an important potential economic advantage over stainless steel, as well as other materials. It offers such cost-saving benefits as the use of uranium of lower enrichment, reduction in the critical mass of uranium, or a combination of these two gains. On the other hand, zirconium and its alloys cost more than stainless steel.

COPPER · TIN · LEAD · ZINC

(From Our London Metal Exchange Correspondent)

Comparatively low daily turnovers towards the end of last week might have indicated that the market was entering the seasonally quiet period, but on Tuesday there was renewed dealing activity, particularly in copper, when, including curb transactions, over 6,000 tons changed hands.

KENNECOTT'S PRICE UNCHANGED

The current low in copper was reached on Friday morning, when forward metal was traded down to £192 10s., but a substantial buying order in the afternoon found sellers reluctant to open up a fresh position, and the market advanced a full 30s. per ton. When business was resumed after the week-end, this upward movement was continued and on Tuesday gathered momentum with one influential buyer covering in the region of 3,000 tons. Some reports suggest that this activity was connected with an order for copper wire from the U.S.S.R.

European demand for electro continues satisfactory, and it is understood that a premium of £12 per ton has been paid for shipment material. In the U.S., Anaconda and Phelps Dodge continued to offer their copper at 26¼ c., whilst Kennecott, the largest producer accounting for two-thirds of the total U.S. mine production, has maintained the lower 25 c. level in spite of ½ c. rise to 26 c. in the customs smelter price in the middle of last week. It now seems probable, contrary to previous expectations, that Kennecott will not adjust their price upwards for the time being, as they consider demand does not justify such a move and so long as the independent fabricators who make up the majority of the company's customers continue to sell their products based on copper at 25 c. The fabricating subsidiaries of Anaconda and Phelps Dodge are now offering their products based on the higher copper price of 26¼ c.

There has been no further news regarding the 150,000 tons stockpiling programme, but reports make it clear that any proposals approved by the Senate will receive a certain amount of opposition in the House. Scrap copper in the U.S. has also moved up, and No. 2 wire is now quoted 20¾ c., an increase of ¼ c. Stocks in U.K. official warehouses at the end of last week showed a decrease of 174 tons to total 18,836 tons.

TIN MARKET FEATURELESS

With consumer demand no better than routine, the tin market has been featureless, and the buffer stock manager has found it necessary to support the cash price at £730. Forward metal has been traded below this figure, whilst the Eastern market has been very steady with the considerable differential between the Singapore price and London showing up the effects of the export quotas. Stocks in U.K. official warehouses at the end of last week showed a decrease of 275 tons to total 13,482 tons. On Thursday morning the Eastern price was equivalent to £749¾ per ton c.i.f. Europe.

SLIGHT RECOVERY IN LEAD-ZINC

There have been no new developments in the lead and zinc markets, which in both cases have showed a small recovery from the low levels touched in the recent downward movement. Consumer demand for lead has been quiet, and a sharp increase in the contango rate in London reflects the arrivals of foreign metal, mainly of Yugoslavian and Spanish origin.

Whilst zinc demand on this side is no better than routine, there has been some improvement in the United States for prime Western grades on the part of steel mills. Die-casters have also been showing better interest for special high grades. O.E.E.C. countries report lead production for May as 50,487 tonnes compared with 48,612 in April.

Closing prices are as follows:

	July 3		July 10	
	Buyers	*Sellers*	*Buyers*	*Sellers*
COPPER				
Cash	£193	£193½	£195½	£196½
Three months	£194½	£195	£196½	£196½
Settlement	£193½		£196½	
Week's turnover	9,025 tons		11,725 tons	
LEAD				
Current ½ month	£71½	£72	£71½	£71½
Three months	£72½	£72½	£73½	£73½
Week's turnover	6,075 tons		4,650 tons	
TIN				
Cash	£730	£730½	£730	£730½
Three months	£730½	£731	£731	£731½
Settlement	£730½		£730½	
Week's turnover	1,455 tons		975 tons	
ZINC				
Current ½ month	£62½	£62½	£63½	£63½
Three months	£63	£63½	£63½	£64
Week's turnover	5,700 tons		3,350 tons	

LONDON METAL AND ORE PRICES, JULY 10, 1958

METAL PRICES

Aluminium, 99.5%, £180 per ton
Antimony—
English (99%) delivered, 10 cwt. and over £190 per ton
Crude (70%) £190 per ton
Ore (60%) bases 19s. 6d./20s. 6d. nom. per unit, c.i.f.

Arsenic, £400 per ton
Bismuth (min. 1 ton lots) 16s. lb. nom.
Cadmium 10s. 0d. lb.
Cerium (99% net), £16 0s. lb. delivered U.K.
Chromium, Cr. 99% 7s. 2d. lb.
Cobalt, 16s. lb.
Germanium, 99.99%, Ge. kilo lots 2s. 8d. per gram
Gold, 250s. 4d.

Iridium, £22 oz. nom.
Lanthanum (98/99%) 15s. per gram.
Manganese Metal (96% - 98%) £310
Magnesium, 2s. 5¼d. lb.
Nickel, 99.5% (home trade) £600 per ton
Osmium, £18 oz. nom.
Osmiridium, nom.
Palladium, £6 5s./£6 15s.
Platinum U.K. and Empire Refined £24/£25 oz.
Imported £20 0s./£21 0s.
Quicksilver, £76 10s. ex-warehouse nom.
Rhodium, £40/£42 oz.
Ruthenium, £14/£16 oz. nom.
Selenium, 50s. 0d. per lb.
Silver, 75d. f. oz. spot and 74⅛d. f'd.
Tellurium, 14s./15s. lb.

ORES AND OXIDES

Bismuth	30% 5s. 0d. lb. c.i.f. 20% 3s. 3d. lb. c.i.f.
Chrome Ore—(Fe ratio 3 : 1)	
Rhodesian Metallurgical (semifriable) 48%	£16 5s. 0d. per ton c.i.f.
" Hard Lumpy 45%	£16 0s. 0d. per ton c.i.f.
" Refractory 40%	£11 10s. 0d. per ton c.i.f.
" Smalls 44%	£14 10s. 0d. per ton c.i.f.
Baluchistan 48%	£11 15s. 0d. per ton f.o.b.
Columbite, 65% combined oxides, high grade	nom.
Fluorspar—	
Acid Grade, Flotated Material	£22 13s. 3d. per ton ex. works
Metallurgical (75/80% CaF_2)	156s. 0d. ex works
Lithium Ore—	
Petalite min. 3½% Li_2O	47s. 6d./52s. 6d. per unit f.o.b. Beira
Lepidolite min. 3½% Li_2O	47s. 6d./52s. 6d. per unit f.o.b. Beira
Amblygonite basis 7% Li_2O	£26 5s. per ton f.o.b. Beira
Magnesite, ground calcined	£28 0s./£30 0s. d/d
Magnesite Raw (ground)	£21 0s./£22 0s. d/d
Manganese Ore Indian—	
Europe (46% - 48%) basis 67s. 6d. freight	nom.
Manganese Ore (43% - 45%)	nom.
Manganese Ore (38% - 40%)	nom.
Molybdenite (85% basis)	8s. 5d. per lb. (f.o.b.
Titanium Ore—	
Rutile 95/97% TiO_2 (prompt delivery)	£35/£36 per ton c.i.f. Aust'n.
Ilmenite 52/54% TiO_2	£11 10s. per ton c.i.f. Malayan
Wolfram and Scheelite (65%)	64s. 0d./67s. 0d. per unit c.i.f.
Vanadium—	
Fused oxide 90 - 95% V_2O_5	£10 per unit c.i.f.
Zircon Sand (Australian) (65 - 66% ZrO_2)	£14 5s. per ton c.i.f.

Mining Finance

Ghana's Green Light For Golds

The changes in taxation introduced by the finance minister, Mr. Gbedemah, in the Ghana Budget should certainly have done nothing to damage investment faith in this part of the world under its new masters. The general company tax rate is being reduced by 1s. to 8s. in the £. Against this an extra 6d. is being charged on the profits of companies incorporated outside Ghana except for the profits that are retained in the country. This applies to the gold mines, all of which are London based. Contrarily, a new withholding tax of 6d. that is being imposed on dividends and interest paid to non-residents does not apply to the mines but only to companies incorporated in Ghana.

Mr. Gbedemah confirmed that it is still intended to go ahead with the Minerals Profits Tax Bill designed to alter the present minerals duty so that it can rank as a charge for double tax relief. The need for this Bill has, of course, become less urgent so far as the London companies are concerned since our own Chancellor introduced the Overseas Trade Corporation concessions which exempt such concerns from U.K. tax liability except insofar as they remit profits for the payment of dividends.

It is thought by the London headquarters of the mines that they should obtain some overall benefit from these Ghana tax changes. The low-grade mines are, however, more interested at the moment in the prospects of the continuance in some form or another of the Ghana Government assistance for this class of property brought in as part of the African wage increase agreement of 1956. The total amount was £100,000 a year for two years which means that this assistance expired last month. The four mines receiving it were Amalgamated Banket, Bremang, Ghana Main Reef and Bibiani. The following table shows the part played by the subsidy in the May returns.

	Working Profit	Grant Included
	£	£
Amalgamated Banket	29,960	4,167
Bibiani	2,985	2,200
Bremang	16,244	772
Ghana Main Reef ...	13,746	1,116

As may be seen, the grant is of prime importance from a profit viewpoint to Bibiani. The Ghana Government is looking into the question of future assistance and a Canadian mining expert, Mr. Monture, is due to arrive on the Coast in mid-July to examine the whole question. This suggests that any solution may be arrived at along Canadian lines, namely a sliding scale based on the level of costs. Meanwhile, the companies are believed to be pursuing the matter individually and Bremang in particular is thought to be favourably placed for some form of government help owing to the large expenditures that have had to be undertaken on dredge removals in order to keep the company going.

Diamonds

Outside gold, the main concern likely to be affected by the Ghana tax changes is Consolidated African Selection Trust which includes among its diamond activities the production of stones in Ghana. This company also has to face sooner or later another Ghana Government move in the Budget, namely that in due course all diamonds mined in Ghana will have to be sold through the Accra diamond market. Mr. Gbedemah expressly stated that any company exporting directly would be allowed to work out its existing contract. C.A.S.T. is the company mainly involved because it is a member of the De Beers marketing organization which controls the sales of something near 90 per cent of the Free World's diamond production. In other words, when this organization's contracts come up for renewal again in a year or two's time, there might be a small scale clash with the Ghana Government. From past experience of De Beers any such clash is likely to be settled amicably.

Shareholders in C.A.S.T. should, meanwhile, note that there has been a further falling off in the sales of their company's principal product, industrial diamonds, in the June quarter's figures for the De Beers group world diamond sales as is shown by the following table.

	Gems	Industrials
1958	£	£
June qtr. ...	10,734,932	3,199,173
March qtr. ...	10,513,699	4,776,282
1957		
Dec. qtr. ...	12,264,006	5,372,053
Sept. qtr. ...	15,114,159	6,330,429
June qtr. ...	14,467,447	5,482,004
March qtr. ...	10,972,484	6,769,530
1957 total ...	52,818,096	23,954,016

This shows clearly the way in which the U.S. recession is eating into diamond sales which last year reached the record total of over £76,000,000.

LONDON MARKET HIGHLIGHTS

The past week has seen one of those recurring periods of lassitude which afflict the mining share markets, as well as other sections of the House, from time to time. Kaffirs were tending to tail off with a diminution of business, and although the base metal prices have been staging something of a recovery, it would be an exaggeration to say that share prices have been following very much in their wake.

Although Kaffirs have been quieter, they have still retained the firm undertone which has been discernible for some weeks past. Indeed, as we go to press, this market has been showing signs of recapturing some of its former buoyancy.

A number of the Rand finance shares continue to be notably favoured by the investor who is wishing to re-enter the gold share market without committing himself to an isolated operating mine. Union Corporation have been particularly singled out for attention. Apart from the more obvious investment attractions of the shares, there has still been a certain element of hope in the recent buying that this London company may be thinking of transferring its domicile to South Africa. This idea is not a new one and for the considerable time it has been in circulation it has never been confirmed. "One day, perhaps", is what dealers seem to think.

Central Mining, after the full report, have gone ahead well to 64s., their highest for the year, and in front of the dividend "Johnnies" at 51s. 6d., also a new high for the year, have been well supported.

At this writing, there has also been support for the younger mines in the O.F.S. and Western Transvaal, after some decline on previous days. Free State Geduld at 91s. 10½d. have reached their best for the year, and others to obtain this distinction have been Middle Wits (15s.), "Ofsits" (66s. 6d.), President Brand (53s. 6d.), and Riebeeck (16s. 4½d.).

Diamond shares have not been greatly affected by the latest diamond sales figures covering the first six months of the year. Sales for the first five months had already been made known, and the fact that there was a further decline over the full half-year to June 30 came as no surprise. It is not seen that dividends are likely to be affected in view of the cautious distribution policies of the past. Consolidated African Selection at 14s. 4½d. have been unaffected by the Ghana budget changes, although it is conceivable that the company could benefit therefrom, apart from its current ranking as an O.T.C. In the same context, West African Gold shares have not been tangibly affected by the Ghana proposals.

Interest in Coppers and other base metal shares has waned, and although there has been little if any selling pressure, prices have been generally inclined to give ground. There has, however, been notable investment support for Chartered, which at 64s. have advanced to their year's highest so far.

CENTRAL MINING SPREADS ITS WINGS

The full report of Central Mining and Investment Corporation for the year to March 31 last confirms the guess put forward here last week that the exceptional profit from share transactions of £800,052 arose largely from the liquidation of Central Mining Free State Areas. This special operation, it is now stated, accounted for some £643,000 of this profit. The reason is that the book value of the holding in C.M.F.S.A. was substantially below the market value whereas the major part of the liquidation distribution was received in Harmony gold shares taken, of course, at the current market price.

There are a number of other important points in the report. Quoted sharehold-

ings have risen by close on £2,000,000 to £4,692,411 compared with a year previously and unquoted by over £1,200,000 to £1,406,674. These increases arise from completion of the $3,690,000 investment in the Canadian oil concern, Western Decalta Petroleum; a rise in the holding of the associated Rand Mines as a result of that company's new issue; the increase in the Harmony holding via C.M.F.S.A.; the acquisition of an interest in the unquoted Rand American Investments (Proprietary), a new company which holds virtually all Central Mining's preference capital and a substantial block of the ordinary; finally, investment in U.K. and North American industrial equities has expanded by approximately £470,000.

The quoted part of the Central Mining investments had a stock market value on March 31 of £15,305,421 against £12,396,507 a year previously. Even after pursuing the expanded investment programme net liquid assets still amount to over £7,000,000, although it should be noted that contingent liabilities have shot up from £576,721 to £2,186,895. Net asset value of the consolidated balance sheet, taking shareholdings at market prices, works out at £24,700,000, equal to around 118s. per £1 ordinary share after allowing for the preference capital. The present price of the ordinary is 62s. 6d. so there is an unusually high asset cover. The other question to be decided is whether the current year's potential profits will, after allowing for the absence of the special surplus from the C.M.F.S.A. deal, enable the dividend to be maintained at the 1957-58 rate of 4s. It certainly looks as though they will. The payment was covered 2.4 times by last year's total earnings and if the C.M.F.S.A. profit is deducted the cover would still appear to have been in the neighbourhood of 1.8.

GOLD AND BASE METAL

Gold and Base Metal Mines of Nigeria, a member of the Finsbury Pavement House group, has had the double misfortune of having, in each case through force of circumstances, brought its rapidly expanded columbite production programme to a peak of efficiency just too late to catch the U.S.-inflated boom in this metal while at the same time tin output has been hard hit by the restriction scheme which came into force last December under the International Tin Agreement. Thus, dividends, resumed with a payment of 7½ per cent on the 2s. 6d. stock units for 1956 after a blank period in 1955, are once again omitted.

The 1957 earnings would, in any case, only have allowed a distribution of 2½ per cent, but as the chairman, Major General W. W. Richards, points out, tin restriction has meant reduction of the company's cash resources by the heavy demands of the buffer stock. Consequently, the remainder must be husbanded to ensure the continuance of operations at the reduced level required by the scheme. This is currently at a rate of 96¼ tons of tin ore a quarter, equal to an annual 387 tons compared with production of 1,049 tons in 1957. As regards columbite, the company had to curtail deliveries under a forward contract last year in view of the "complete disappearance of consumer demand". This demand shows no signs as yet of re-emerging, it is stated.

Retrenchment of operations has inevitably been necessary. It has included a closing down of the Liruie area which was opened up in order to produce not only tin but also to contribute towards the major expansion of the company's columbite output. Meanwhile, the 1957 profit of £10,989 has been added to the carry-forward bringing this up to £26,537. It looks as though the balance sheet is in a reasonably healthy situation in the circumstances. A resumption of dividends might thus be quite quickly sparked off by either the winning through of the tin scheme, which would mean a relaxation of output restriction allied to a price above £730 a ton, or by any resumption of the demand for columbite. Gold and Base 2s. 6d. units stand at 10¼d.

Financial News and Results

Eighty-Nine Per Cent Wanted Saaiplaas Units.—The recent offer of combined note-share units by F. S. Saaiplaas was subscribed to the extent of 88.6 per cent. Last renunciation date is July 18.

Johnson Matthey Profits.—After a lower tax charge, net group profits for the year to March 31 last of Johnson, Matthey and Co., precious metal refiners, were barely changed at £934,492, compared with £945,498. An unchanged final dividend of 7 per cent makes 10 per cent for the year, as previously.

Phoenix's Offer Successful.—The offer by Phoenix Colliery to acquire the issued share capital of Consolidated Collieries was accepted by holders of 98.44 per cent of the stock and has accordingly become unconditional. The new shares in Phoenix Colliery have been allotted to the persons accepting the offer and were quoted on the Johannesburg Stock Exchange with effect from July 2, 1958.

Additional Finance from British Guiana Cons.—The Potaro dredge, which operated throughout 1957, dredged 1,409,124 cu. yds. for 9,595 oz. of gold, equivalent to 3.3 grains per cu. yd., worth 20.6d. Total operating costs in British Guiana were 26.8d. per cu. yd. The Konawaruk dredge started digging its way out of the paddock in November, reaching ore on the last day of the year. The group operating loss dealt with in the parent company's accounts at 1957 amounted to £57,225 (loss, £5,345). Accumulated losses at December 31, 1957, amounted to £72,514. Borrowings from the Colonial Development Corporation totalled £991,447 at December 31, 1957, while short-term bank borrowing amounted to some £23,000. The Corporation has now undertaken to provide a further £80,000. The company has also arranged for postponement of interest and capital redemption payments to June 30, 1958. The Corporation's option to convert their first debenture into "B" ordinary shares is to be extended by two years to December 31, 1960.

Tronoh to Buy Puket.—Subject to shareholders' approval, Puket Tin Dredging has accepted the offer by Tronoh Mines for its leases, equipment and quota allocation (probably the main object of the bid). The cash consideration for the purchase, effective on July 1, is £107,000.

Kilo-Moto Output Down.—Total output in 1957 of the Société des Mines de Kilo-Moto, the Belgian Congo's largest gold producer, was 7,447.6 kg. against 7,544.9 kg. in 1956. This was equal to 64 per cent of the gold output of the Belgian Congo and Ruanda-Urundi.

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VACANCY: GEOLOGIST

Applicants should possess an Honours Degree in Geology requiring a four-year course at a recognized University. Previous experience would be a recommendation, but is not essential.

Salary Scale, £900 x 100 to £1,100 x 75 to £1,250 x 50 to £1,650 p.a. The commencing salary may be higher than the minimum depending upon experience and qualifications, but in no case will exceed £1,250 p.a.

Application forms and further details from Secretary (R), Rhodesia House, 429 Strand, London, W.C.2. Closing date, August 23.

FEDERATION OF NIGERIA

PRINCIPAL, SCHOOL OF MINES (TRAINING AND RESEARCH), MINES DEPARTMENT

Qualifications: Candidates should possess a good Honours degree in mining engineering with emphasis on ore dressing, or equivalent qualification, together with at least two years' experience of modern milling methods, preferably with both wet and dry ore dressing machinery. They should have undertaken ore dressing research, preferably with dry milling methods, and should also have had experience of, or have a leaning towards, teaching adults.

Duties: Administration of and teaching in a small School of Mines, together with research into Nigerian mineral dressing. Also attendance in court as expert witness in cases involving identification of minerals. The students at the School will not generally be of a high academic level. (Further particulars can be obtained from the Colonial Office.)

Terms of Appointment: On contract/gratuity terms with emoluments of £2,100 p.a. Free passages for officer and wife. Allowances and passage concessions for children. Quarters provided at rental. Generous leave. Free medical attention. Taxation at low local rates.

Apply to Director of Recruitment, Colonial Office, London, S.W.1. State age, qualifications and experience. Quote BCD 99/14/010/H1.

Rand & Orange Free State Returns for June

Company	June 1958 Tons (000)	June 1958 Yield (oz.)	June 1958 Profit† (£000)	Year end	Current Financial Year Total to date Tons (000)	Current Financial Year Total to date Yield (oz.)	Current Financial Year Total to date Profit† (£000)	Last Financial Year Total to date Tons (000)	Last Financial Year Total to date Yield (oz.)	Last Financial Year Total to date Profit† (£000)
Goldfields										
Doornfontein	88	36,766	191·4	J	1,032	424,361	2330·2	932	375,075	1832·8
Libanon	98	22,791	54·2	J	1,306	275,281	643·1	1,185	265,833	661·5
Luipaards Vlei	70	12,449	5·5	J	853	152,540	80·0	971	173,963	114·8
Rietfontein	22	4,957	12·3	D	133	30,310	79·8	147	33,912	96·6
Robinson	70	14,931	4·0	D	429	91,578	33·8	447	90,768	51·1
Simmer & Jack	90	16,958	14·2	D	518	99,961	85·8	571	105,530	109·7
Sub Nigel	66	15,910	25·1	J	790	197,923	323·1	793	217,348	492·1
Venterspost	89	21,102	L66·0	J	1,426	343,028	442·3	1,497	345,335	787·1
Vlakfontein	50	17,739	85·4	D	296	104,431	504·0	296	105,935	510·0
Vogels	96	21,252	41·4	D	575	129,044	263·9	593	137,943	398·4
West Drie	78	75,241	611·3	J	910	873,141	7218·4	900	847,850	6980·3
Anglo American										
Brakpan	126	16,176	11·0	D	740	99,414	71·3	636	108,592	67·3
Daggas	242	49,843	265·3	D	1,364	285,189	1481·1	1,360	299,776	1639·2
East Daggas	92	15,277	28·6	D	541	89,899	164·0	570	94,123	206·4
F.S. Geduld	69	49,433	348·1	S	587	420,313	2888·7	458	524,852	1338·2
Loraine	74	13,788	L21·8	S	592	111,558	L169·6	561	108,679	L58·3
President Brand	90	67,862	552·4	S	697	521,388	4210·6	557	425,300	3492·5
President Steyn	99	37,609	200·6	S	848	358,216	1832·8	810	313,024	1784·8
S.A. Lands	92	18,805	55·0	D	529	118,243	307·5	537	116,257	397·9
Springs	128	14,204	9·0	D	755	84,039	50·0	759	82,254	34·0
Vaal Reefs	74	33,303	186·4	D	416	186,746	1051·8	349	152,115	894·3
Welkom	90	26,788	76·7	S	754	223,185	615·0	776	196,601	435·4
Western Holdings	100	55,950	415·1	S	869	465,788	4144·0	836	384,807	2537·3
West Reef Ex.	114	26,793	66·0	D	669	156,816	362·8	733	158,457	383·1
Central Mining										
Blyvoor	101	62,099	440·1	J	1,244	734,191	5175·1	1,264	718,409	2212·0
City Deep	108	22,026	9·0	D	825	158,447	51·8	880	174,344	105·3
Cons. M.R.	140	20,600	13·4	J	1,853	265,432	130·8	2,000	276,539	106·6
Crown	225	33,966	13·2	D	1,362	208,100	92·4	1,437	210,081	L17·1
D. Roodepoort	182	32,895	51·0	D	1,073	194,018	299·7	1,098	192,550	310·0
East Rand Prop.	222	56,209	147·0	D	1,214	337,129	884·1	1,285	335,226	737·3
Harmony	78	30,501	124·9	J	952	651,548	1797·9	946	340,742	1912·9
Modder East	136	12,907	2·0	J	1,643	162,564	28·5	1,571	171,811	28·5
Rose Deep	57	7,047	0·2	D	342	45,393	21·0	297	45,511	1·7
J.C.I.*										
E. Champ d'Or	12	337	L28·2	D	72	1,868	L160·2	72	2,021	L157·3
Freddies Cons.	56	14,529	L54·0	D	301	91,732	L206·0	340	87,221	L130·2
Govt. G.M.A.	61	11,490	1·0	D	374	65,379	6·9	716	118,301	L66·1
Randfontein	31	4,734	5·1	D	172	27,924	30·3	461	77,540	75·3
Union Corp.										
East Geduld	125	38,448	261·0	D	753	231,573	1571·4	824	253,585	1784·2
Geduld Prop.	73	12,240	7·6	D	479	76,255	55·1	613	97,134	156·8
Grootvlei	195	41,558	212·0	D	1,165	248,190	1263·1	1,157	247,527	1297·8
Marievale	69	18,117	80·1	D	423	111,065	490·0	423	111,166	498·0
St. Helena	118	34,344	182·0	D	692	203,379	985·4	692	201,912	1109·8
Van Dyk	75	14,041	25·3	D	451	82,802	148·3	463	78,190	33·7
General Mining										
Buffelsfontein	117	39,145	182·0	J	1,333	438,920	2238·8	577	173,661	699·6
Ellaton	33	7,684	33·0	D	192	44,496	187·4	195	41,547	90·5
S. Roodepoort	28	6,680	24·1	J	350	82,779	299·6	346	80,820	284·7
Stilfontein	113	55,805	383·0	D	660	327,284	2070·3	580	251,956	1581·5
W. Rand Cons.	130	19,152	18·6	D	858	108,116	78·6	863	125,797	99·2
Anglo-Transvaal										
Hartebeestfontein	87	47,415	329·6	J	1,018	558,215	3761·1	1,015	473,403	2958·7
N. Klerksdorp	10	1,057	L7·9	D	61	6,527	L46·5	62	7,478	L31·4
Rand Leases	177	25,665	8·5	J	2,034	306,609	83·4	1,939	302,991	L143·8
Village M.R.	30	4,692	3·2	J	374	60,766	45·0	395	64,039	96·3
Virginia O.F.S.	101	26,664	45·5	J	1,203	301,681	633·7	1,126	267,917	742·4
Others										
N. Kleinfontein	84	10,227	L5·3	D	540	64,115	L29·0	587	67,931	L47·1
Wit Nigel	18	4,342	6·9	J	214	51,490	65·7	216	43,885	93·0

Gold has been valued at 249s. 0d. (May 248s. 10d.) per oz. fine. L indicates loss. † Working Profit. * Working Profit includes sundry revenue. Table excludes profits from Uranium, Pyrite and Acid, and also production from Uranium divisions at Luipaards Vlei, Randfontein and W. Rand Consolidated.

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Publications Received

Owing to the outbreak of war and the retirement of the author, Dr. Russ, in 1939, the publication of *The Geology of Parts of Niger, Zaria and Sokoto Provinces*, Bulletin No. 27 of the Geological Survey of Nigeria, has been delayed until the present time.

The bulk of Nigerian gold output during the period 1932-40 came from the area described in this publication. Gold production reached a peak in 1935 with an output of 38,216 oz., but since that date there has been a rapid decline and currently production is negligible.

A large part of the bulletin is devoted to a description of the Precambrian rocks and their relationships. This has led to a better understanding of their nature and origin. The 1:500,000 geological map accompanying the bulletin is also available on the 1:250,000 scale. The ten half-degree sheets covering the area described have been issued separately on a scale of 1:250,000.

★

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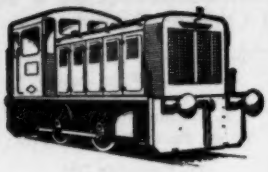
The first part of the *Year Book* gives a review of the activities of the past year in the electrical and allied manufacturing field. This includes summaries of reports from the Electricity Supply Commissions in the Union of South Africa and the Central African Federation from the larger municipalities in these territories.

The directory also provides a reliable and up-to-date guide to the electrical and power supply and allied businesses, their products, services, and organizations. Names of wholesalers and distributors are included, with the names and addresses of the agents of overseas electrical manufacturers. The products and materials section gives in alphabetical order the names and addresses of the makers and stockists of the complete range of plant and machinery.



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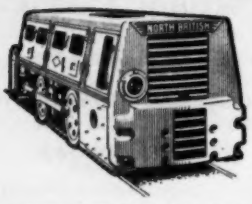

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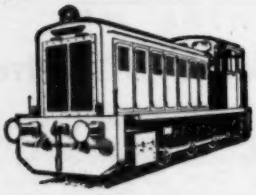

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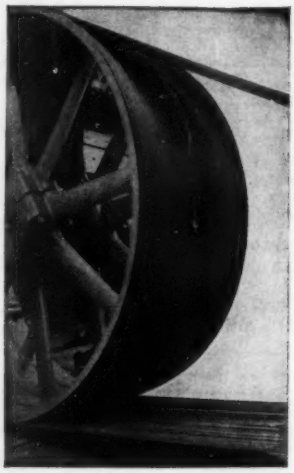

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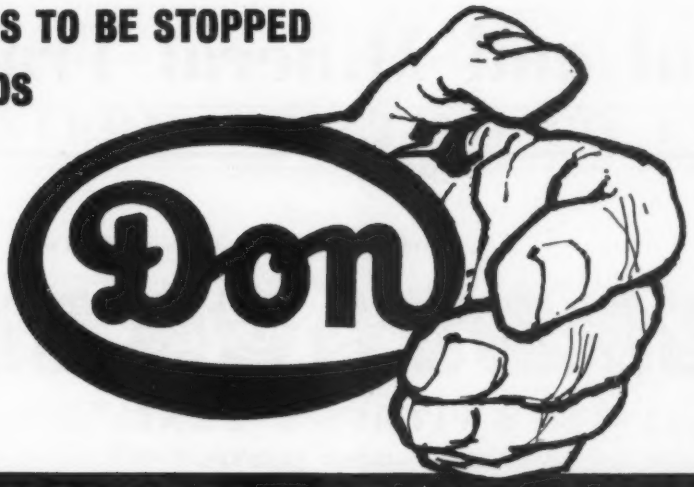

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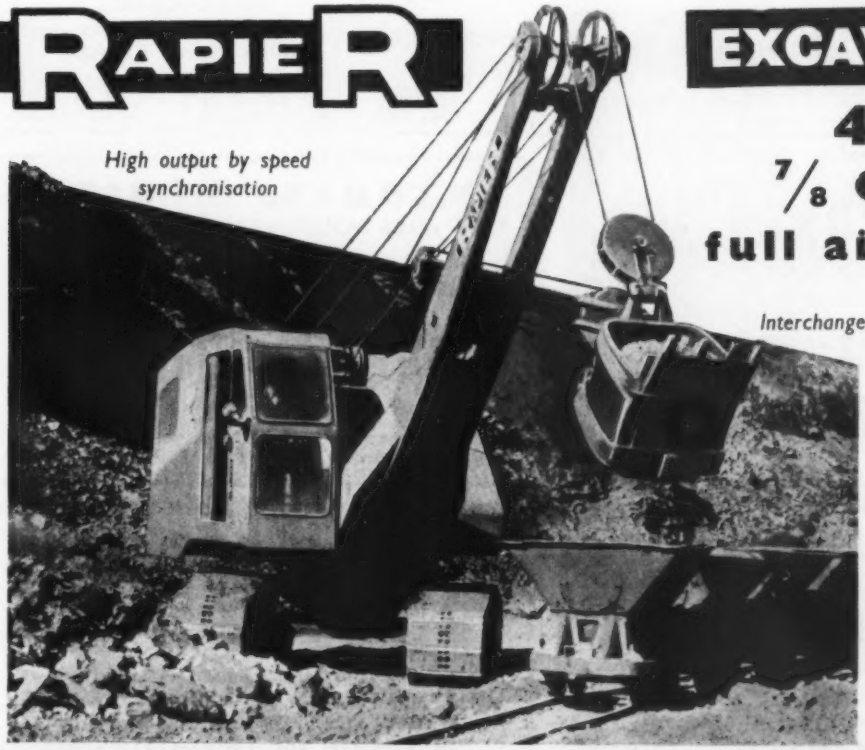

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